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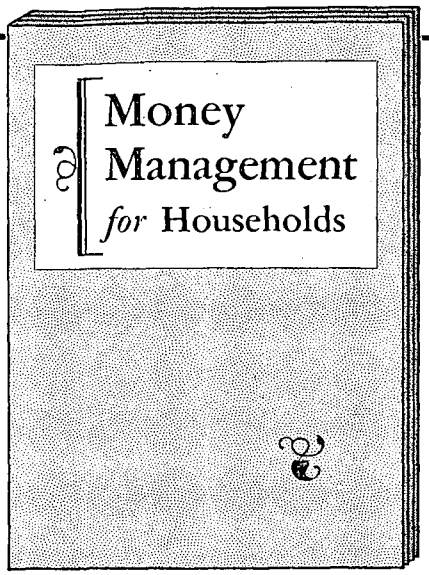

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Literary Editor, New York Evening Post, Feb. 3, 1931.

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2 "Work More" Propaganda
3 Socialist Emulation
4 Miracles—at a Price
5 Problems of Population

II: THE INDUSTRIAL REVOLUTION

1 The Internal Market
2 The Tempo
3 The Problem of Labor
4 The Burden of the Cost
5 Inflation
6 Progress of the Plan
7 The Key Industries

III: THE AGRARIAN REVOLUTION

1 The Crisis
2 The State Farms
4 "Collectivization"
4 The Stock Crisis
5 Flax and Cotton
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7 Geographical Redistribution of Crops
8 Conclusion

THE response to the pre-publication announcements of "PIATILETKA" have exceeded anything in our experience. More than half of the first edition was ordered before the book appeared. In part this extraordinary interest is due to the growing realization that Russia's experiment in collectivized industry is producing results. But there have been ten other book on Russia published within a month. The preference for Mr. Farbman's report arises from the fact that critics who read the London Economist's Russian Supplement (by Michael Farbman and included in "PIATILETKA") applauded it as the most competent summary of the 5-Year Plan available. Mr. Farbman has an unusual gift for condensing voluminous facts. His account is clear, accurate and brief. He writes from a true understanding of the policies and purposes of the Soviet regime and a deep sympathy for, and knowledge of, the Russian people. His book contributes to a thorough-going comprehension of Russia's new plan of economy and will inform the American reader on all points of essential interest. At your bookstore or you may use the order blank below.

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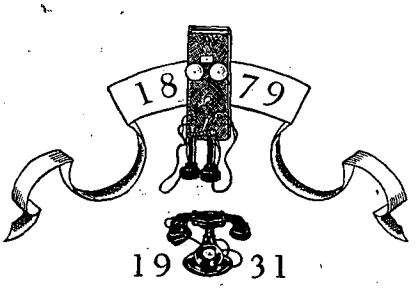

In 1879, the New York telephone directory was a card listing 252 names. There were no telephone numbers, nor any need for them. When you telephoned, you gave the operator the name of the person you wanted. Service was slow, inadequate and limited principally to people of wealth. The cost of a single telephone was as high as $240 a year.

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The "Teen Age"

LOOK at that fine boy of yours, brought safely through childhood ailments. Now, as he enters his "teens", while he is still growing, he must build his health to guard against tuberculosis—a mortal enemy of those in run-down condition.

Adolescence is a critical age in physical development. It is a period of special strain—when growth and change are rapid—and when health and strength must be kept at the highest possible point.

Your boy may be tempted to over-tax his strength and undermine his vitality by striving to compete with older and stronger boys. Or your daughter may risk her health by too much social activity added to her school work, or by dieting in an effort to keep slender in emulation of some screen celebrity. Low vitality and under-nourishment make boys and girls especially susceptible to tuberculosis.

During the early "teens" the development of tuberculosis of the lungs is usually so slight as to cause none of those familiar symptoms of the advanced stages of the disease—loss of weight, lack of appetite, indigestion, fatigue and a persistent cough. The first symptoms in adolescence may be listlessness, overtiredness, failure to gain weight, night sweats.

But in the late "teens" or early twenties, in event of low vitality, tuberculosis germs—especially in case of re-infection or heavy infection—gain headway. The tuberculosis deathrate reaches its peak among women at about age 22 and among men at about 42. Many of these deaths can be prevented.

Perhaps during no age in life are annual physical check-ups more important and valuable than during adolescence. And should you have any reason to suspect the presence of tuberculosis, consult your doctor as to the advisability of having the tuberculin or x-ray tests to find out whether or not your boy or girl is threatened.

The Metropolitan Life Insurance Company will gladly mail, free, to anyone who requests it, a copy of its booklet, "The Care and Prevention of Tuberculosis." Ask for Booklet 4-S-31

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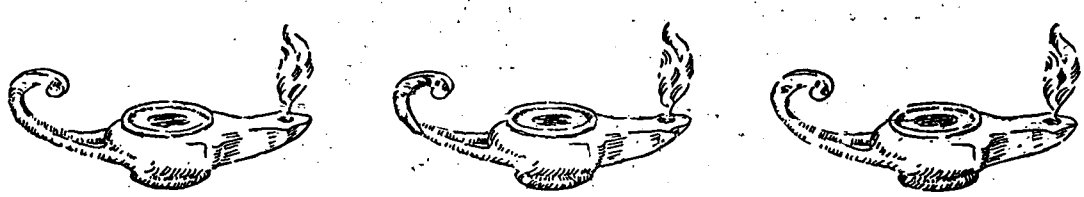

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THE SURVEY

Graphic Number

Vol. LXVI, No. 1 April 1, 1931

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The Gist of It

WHAT and where we are, where we want to go and how to get there—these are ambitious questions that people ask of science. In this special issue of Survey Graphic, lookouts at many mastheads tell what they see before us and on the horizon—the news from biology, anatomy, public health; from psychology, anthropology, statistical research; from sociology and from eugenics, the infant science of them all. The editor of this issue is MARY ROSS, who gratefully acknowledges the help and collaboration of many advisors, especially of officers of the Brush Foundation.

TO the tens of thousands of readers who were charmed by The Biological Basis of Human Nature (W. W. Norton, $4) the name of H. S. JENNINGS (page 7) needs no further introduction. Professor Jennings is head of the department of zoology at Johns Hopkins University and a past president of the American Zoological Society and the American Society of Naturalists.

HOW the story of growth is written in living bone is told on page 13 by T. WINGATE TODD, professor of anatomy at Western Reserve University in Cleveland, Ohio, director of the Hamann Museum of Comparative Anthropology and Anatomy, and of the Brush Foundation, whose research he describes.

ONE of the classic studies of contemporary social science is The Effect of Environment on the Intelligence of Foster Children, by FRANK N. FREEMAN, professor of educational psychology at the University of Chicago. Here Professor Freeman outlines a dynamic conception of what we call intelligence. Page 17.

THAT personality is more than the simple sum of its parts is the point of departure from which DR. ABRAHAM MYERSON takes off on his account of why we feel and act and think as we do. Dr. Myerson is professor of neurology at Tufts Medical School; director of research at the Boston State Hospital; senior visiting neurologist of Boston City and Beth Israel Hospitals, and psychiatric examiner of prisoners for the Commonwealth of Massachusetts. Page 22.

WHAT is happening now that the social sciences have come out of the armchair and betaken themselves to streets and marketplaces, is suggested on page 24 by DONALD SLESINGER, formerly executive-secretary of the Yale Institute of Human Relations, now chairman of the Social Science Research Committee of the University of Chicago.

HOW science's discoveries are loosening the ancient clutch of circumstance on man is suggested on page 27 by WILLIAM FIELDING OGBURN, professor of sociology at the University of Chicago, past president of the American Sociological Society, a member of President Hoover's Research Committee on Social Trends.

WITH all his concern for curbing nature, man only recently has turned to the fundamental need to consider the quality and quantity of his own kind. Here, on page 31, some of the conditions and implications of a self-controlled population are discussed by HENRY PRATT FAIRCHILD, professor of sociology at New York University and president of the American Eugenics Society.

THAT the race should not be content merely to try to limit the production of the unfit is the assumption on which ROSWELL F. JOHNSON here bases a program of positive eugenics. Professor Johnson, secretary and past president of the American Eugenics Society, teaches eugenics at the University of Pittsburgh. Page 36.

HOW the birthrate has differed in city and country, and for each by social class, is told on page 38 by FRANK W. NOTESTEIN of the division of research of the Milbank Memorial Fund.

GUY IRVING BURCH (page 42) is executive-secretary of the Population Reference Bureau; chairman of the committees of the American Eugenics Society on immigration, legislation, and birth regulation, and a member of the editorial board of the magazine People.

OTTO KLINEBERG has investigated social psychology in Europe and among American Indians and Negroes, and at present is carrying on research among Negro children in New York and lecturing at Columbia University. Page 44.

THE next two contributors to this issue—DR. HAVEN EMERSON (page 49) and LEON WHIPPLE (page 52) have met readers of Survey Graphic repeatedly in their capacities as associate editors. Otherwise and among many other things they are, respectively, professor of public health administration at Columbia University, and professor of journalism at New York University.

CHARLES B. DAVENPORT, director of the Department of Genetics of the Carnegie Institution and president of the International Federation of Eugenics Organizations, hails with pleasure (page 56) the new Wells birdseye view of biology for the common man.

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THE SURVEY
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No. 1

Nature and Nurture

The Biological Point of View

By H. S. JENNINGS

AN automobile, a radio set, a working contrivance of any kind, depends in every detail of its construction and operation on the materials of which it is made; every detail can be made better or worse by change of materials. But every detail depends too on the methods of manufacture and can be made better or worse by changing the processes to which the materials are subjected.

These things are true too of those working contrivances that we call living things; they are true of human beings. Every feature, every quality that they show depends on the materials of which they are made, the materials that come to them from their parents; every feature can be altered by change of these materials. This is the influence of "nature," of "heredity." But all their features and qualities can be altered likewise by changing the treatment of this material; by changing the conditions of life; by training, education, experience; by "nurture." No characteristic is due exclusively to nature, to heredity; none exclusively to nurture, to environment. All are produced by the interaction of heredity and environment and can be altered by suitable changes in either.

It is when we compare the peculiarities of different individuals that the roles of nature and nurture become distinguishable. Some of the diversities between individuals are due to the different materials from which they are made; some to the different experiences that they have undergone. Certain kinds are practically always due to diversities of inherited material; such are differences in color of eyes. Other types may be due either to differences of material or differences in the conditions of life. Such are skin color; such are difference in temperament, mentality, behavior. Of greatest interest for the problems of humanity are the relative role of nature and nurture in these matters of character and conduct. Here the two are closely intertwined; but their roles can be distinguished if we have sufficient knowledge. Look first at the role of "nature," of the materials from which individuals are formed at the beginning.

Differences in the materials with which individuals start life result from the fact that these materials come from our two parents. The two parents each bear in their cells a great set of diverse materials, perhaps a thousand different kinds; these are commonly called genes. The set borne by one parent differs greatly from that borne by the other. In forming a child, half of these materials are taken in a random way from one parent, half from the other; the two halves are put together to form the outfit of the new individual. It is like the drawings of a lottery with the genes as the counters. The numerical rules by which these drawings operate have been worked out; they constitute Mendelian inheritance. With so great a number of genes to draw from, no two children thus produced, even by the same pair of parents, obtain the same set of materials. It is largely to this that is due the great variety in features and character among human beings. This variety is increased by the different conditions and experiences of life; but even without these the variety would still be prodigious. No two persons would be alike—except certain rare pairs of individuals that are produced in a different way.

THESE rare individuals produced in a different way are what we call identical twins. They are of enormous interest; an interest that has only recently come to general consciousness. They yield the key to the relative roles of nature and nurture in the characters and destiny of human beings. They are experiments performed for us by nature, to give us an insight into the relative influence of identity of material and diversity of environment. Identical twins are at the start duplicate individuals; they have the same materials, the same genes, in the same combinations. They show us how like or how diverse will be two individuals that do not differ in nature, though they do differ in nurture.

Identical twins start life as a single individual; as a single fertilized egg, having a certain combination of genes formed in the way that is usual for producing a single individual.

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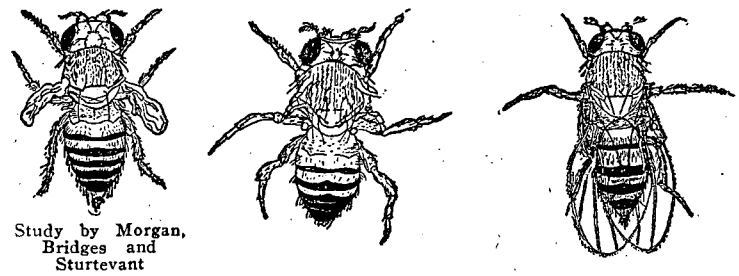
But at an early stage in development this egg divides into two eggs, these two receiving exactly the same combination of hereditary materials, through the fact that each gene present divides and gives half of itself to each of the two. The persons that develop from these two identical combinations of genes are therefore "one-egg twins." The formation of such twins from a single egg has been studied in detail in certain animals.

There occur also "two-egg twins." These begin as two separate eggs, having diverse combinations of genes drawn in the usual way from the two parent stocks. The existence of such twins, for comparison with the one-egg twins, completes the material that we require for discovering the precise effects of diversity and identity of hereditary materials. Methods have been worked out for determining by physical tests to which class any pair of twins belongs. The conditions to which the two individuals of a pair are subjected are as much alike in the two-egg twins as in the one-egg twins, so that the differences between the two kinds are the result of nature, not of nurture.



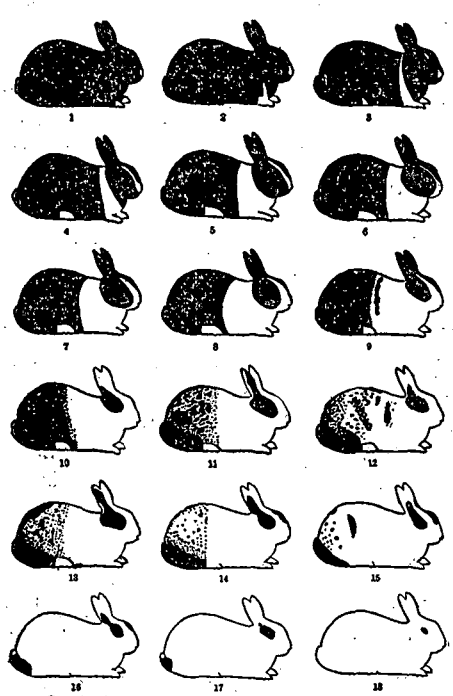
Study by Morgan, Bridges and Sturtevant

A B C

The mating of defective parent A, having vestigial wings, with parent B, no wings, yields normal offspring C

By comparing these two types of twins we can answer the questions: What kinds of similarities in features, temperament, mentality, character, conduct, destiny, result from identity of original materials, identity of genes, identity of "nature"? What kinds of differences in any or all these respects result from differences in the original materials with which individuals start life? What kinds of characteristics are influenced by similarities and differencies of heredity? Of environment?

As everyone knows, identical twins, formed of the same materials, are wonderfully alike in physical characteristics. They are always of the same sex. Their figures and features are so similar that it is difficult to tell them apart. Their eyes and hair are of the same color, their complexions are alike. Their facial features have the same form and size. Their stature and weight are very similar. Their teeth are alike even to irregularities. Their finger prints are as similar as are those of right and left hands in the same individual. In bodily imperfections, in weaknesses and in tendencies to certain diseases, they are closely similar. If one has tuberculosis or other constitutional disorder at a certain time of life, the other twin very commonly has the same trouble at about the same time.



Study by Professor W. E. Castle of Harvard

The variety of color pattern is determined by one gene which works in conjunction with modifying genes

In all these respects twins of the two-egg type on the other hand are frequently diverse; they are as diverse as are other members of the family. They may be of different sexes; they may have eyes, hair and complexions of different types; features and figures diverse; they may be diverse in imperfections and weaknesses.

This demonstrates that identity of original materials—identity of heredity or "nature,"—produces similarity in all these respects; and that diversity of original materials produces diversity in all these respects. It shows that all physical and physiological characteristics are greatly influenced by the nature of the materials with which life starts; by heredity.

IT does not show, of course, that these things may not also be influenced by the conditions under which the person lives. Color of hair and skin, general physical condition, health and disease—all these things we know positively to be greatly influenced by the conditions to which the individual is subjected—as well as by the materials with which the individual starts. Identical twins show at times unexpected physical differences. One may be right-handed, the other left-handed. One may be distinctly more vigorous than the other. These differences have arisen in their early history, at the time when the division of the egg occurred; they are consequences of the way division took place. But it is clear that identity of original materials is of tremendous effect in producing similarity in all physical respects.

But how does the case stand with temperament and mentality, with character and conduct? These, not physical features, are the matters most important for human society. Are they also influenced by the materials with which we begin life?

Most striking and revealing is the light thrown on these matters by the studies of Johannes Lange (Crime and Destiny, by Johannes Lange: Charles Boni). He found in the prisons of Germany or in prison records, thirty persons each of whom was a member of a pair of twins, the two members in each case being of the same sex. He traced and examined the other twin of each pair. As it turned out, thirteen of the pairs were single-egg twins, while the other seventeen were two-egg twins.

Of the thirteen pairs of one-egg twins one of which was known in each case to be a criminal, the other also had a criminal record in ten of the cases. If one such twin comes into conflict with the law, it is clear that the other one, identical in original nature, has small chance to escape that fate. But the similarity in career and destiny came out most strongly on examination of the detailed records of the two members of a pair. The twins conducted themselves as duplicate personalities might be expected to do. If one twin was a burglar, so was the other. In one pair, one twin was a

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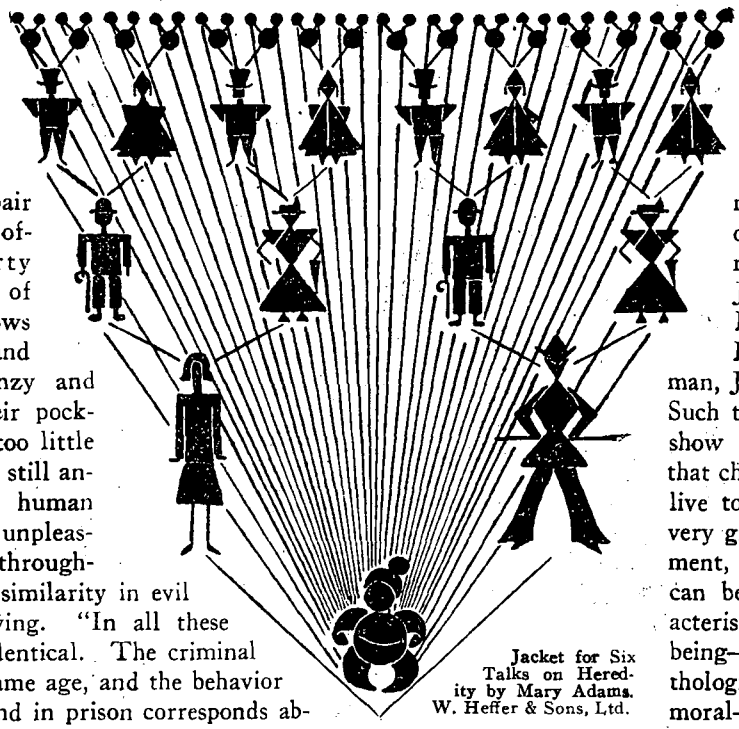
high-powered financial swindler collecting large sums from dupes, so also was the other. Besides the pair that were burglars and the pair that were swindlers, there was a pair that "committed puerile offenses against the property laws;" another consisted of "guttersnipes, but good fellows at heart," that "cannot stand alcohol; it develops frenzy and draws the knives from their pockets." Another pair "have too little sense and will power," while still another "are lacking in all human feeling except for their own unpleasant selves." And so it goes throughout the depressing list; the similarity in evil conduct and fate is terrifying. "In all these pairs the type of crime is identical. The criminal careers begin at about the same age, and the behavior of both members in court and in prison corresponds absolutely," says Lange.



Jacket for Six Talks on Heredity by Mary Adams. W. Heffer & Sons, Ltd.

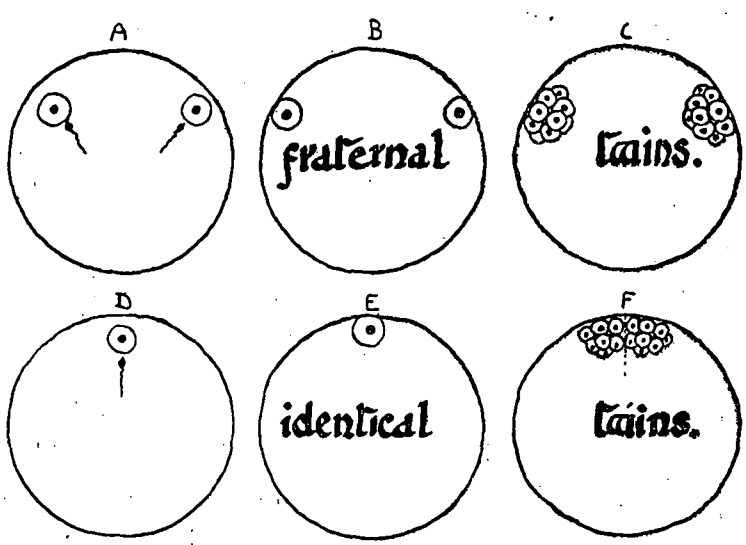
But in the two-egg twins, having diverse original constitutions, the situation was different. Of the seventeen pairs of this kind, in only three cases did both members have criminal records. In the other fourteen, the fates of the two were quite diverse. There was no such detailed parallelism in the records of the two- as was found in the one-egg twins.

In these two-egg twins the environment of the two was as similar as it was in the case of the one-egg twins. But this similarity of environment did not result in identity of fate nor in detailed parallelism in careers. It was the identity of original nature; of the materials out of which they are made, that gave the same careers and the same fate to the one-egg twins. They were almost as much alike in their behavior, their mentality, their careers and their fate, as they were in their physical features.

There is no escape then from the conclusion that behavior, mentality, morality, conduct, career, fate, are deeply affected by the materials out of which the individual is made; by his "nature," his heredity. There is no characteristic or quality of human beings that is exempted from this influence.

This conclusion is confirmed by all the many studies that have been made on the two types of twins and it is in harmony with all that we know of the science of genetics. Experimental work in breeding other organisms shows that they have no characteristics that are not affected by the genes they receive at the beginning. In rare cases, one-egg twins in man have been separated early in life and have lived apart under different conditions. H. J. Muller and H. H. Newman have carefully examined a few cases of this kind, employing modern psychological methods (Mental Traits and Heredity, by H. J. Muller, Journal of Heredity, Vol. 16; Mental Traits of Twins Reared Apart, by H. H. Newman, Journal of Heredity, Vol. 20). Such twins, though separated early, show all the physical resemblance that characterizes one-egg twins who live together. And they still show very great resemblances in temperament, mentality, character. There can be no doubt that every characteristic and quality of the human being—physical, physiological, pathological, temperamental, mental, moral—is deeply influenced by the original materials from which he is made and which came to him from his parents.

All this has been much obscured in the past by lack of understanding of the processes of heredity. Heredity was conceived as a force impelling the individual to be like his parents and more remote ancestors. But since children are often extremely diverse mentally and morally from parents, it was concluded that these are not matters of inheritance. Such similarities and diversities as existed, it was held, were the result of similarity and diversity of environment. But it has been discovered that parents and children are composed of very different combinations of materials; and that it is to this in large measure that are due the great differences between them. It is only in the so-called identical twins that we have individuals made of the same original materials. And comparison of these with other individuals shows, as we have seen, that every feature of human nature, life, and destiny, is deeply influenced by the materials with which the individual begins his career.



A, B, C show how fraternal twins develop from the union of two eggs and two sperms. D, E, F show how identical twins develop from one egg and sperm. (*From Six Talks on Heredity*)

But does this mean fatalism? Are some of us predestined at birth to be criminals? Are others predestined by their outfit of genes to be good citizens? Are some predestined as artists, others as laborers, others as men of science? Is every man's fate determined by the materials dealt to him in the lottery of birth?

Our original stock of materials, though it influences us in every respect, is not all that influences us. As with a machine, every characteristic, including the way the automobile runs and what

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This and the picture on the opposite page are from the collection of rare old lithographs at the Yale Clinic of Child Development

finally becomes of it, is influenced by the materials of which it is made. But the machine and its operation are likewise influenced in every respect by the way the materials are handled, the processes through which they are put, the models employed in molding them. There is a parallel situation in organisms, in man. Characteristics that may be altered by changing the materials of inheritance may be altered also by the conditions under which the individual develops, by the experiences which he has. Our mental life, our behavior, are our methods of response to environment; they are bound to be diverse with different environments. Biology shows as clearly that organisms depend on the conditions to which they are subjected, as that they depend on the materials of inheritance. Conduct and fate are the outcome of interaction between heredity and environment; they may be altered by changing either. The effects of conditions and experience on life are clearly shown in the very records of criminal identical twins that so strongly suggest predestination at birth. In Lange's thirteen pairs there were after all three in which one was a criminal while the other was not. In a number of the pairs, marriage of one twin with a wife of strong character resulted in his reformation, while the other went from bad to worse. Under another organization of society, as Lange pointed out, some or all of the delinquent pairs might never have fallen into crime. The detailed psychological studies of identical twins by Muller and Newman showed that while they have on the whole a great similarity, they may become considerably diverse in temperament and mentality. It is not rare for one to be the leader, the other the follower. The material of inheritance is by no means the only set of influences that affect human characteristics and behavior.

Just what differences may be produced by diverse conditions and experience is a matter to be determined by examination of the facts, not by appeal to biological principles. Here the psychologist, the educator, the social worker, is the expert; not the biologist. There is nothing in biology that prevents us from taking at its face value the evidence that great effects are produced by education, experience, social systems, tradition and state of civilization. There is nothing in biology to discourage attempts for improvement in these matters. So far as we profess to believe in destiny, it must be with the understanding that "destiny" includes the action of all these things, even to the complete deflection of a human career by a word, a look—by anything that arouses an emotion or starts a train of thought.

The most direct way to form an idea of the relative role of environment and of hereditary constitution in the life of society is to imagine a community, a nation, a world, populated exclusively by one great set of identical twins. Such a society would consist of people all having the same genes; all having the same hereditary constitution. Differences of nature, of heredity, would play no part in it. Neglecting differences of sex, what would be the situation in such a society?

All the individuals would be extremely alike in physical respects; as alike as the two members of the most similar pair of twins. And they would be extremely similar in resistance or proneness to disease; in temperament or disposition; in mental alertness; in many features of mentality. But of course they would not all do the same things at the same time. They would not all have the same trade or profession. The world would not be without variety.

CONCEIVE first a world of identical twins all constituted like the wisest man you know; your favorite statesman or cleric or physician or business associate. What would be the state of affairs in such a world? The citizens of that world would see the need for carrying on different lines of work; would carry them on, as do those of the present world. Such individuals have many tastes and capabil-

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ities; some of them would develop and exercise one set of these, others another set. All the diverse lines of activity of the present world would be carried on. In that society in which all differences were due to experience and education, there would still be, as John B. Watson puts in in Behaviorism (W. W. Norton), "doctor, lawyer, merchant, chief," though whether there would eventually still be "rich man, poor man, beggar man, thief" one had best not attempt to say.

Some of these wise men in embryo would be born into the savagery of interior Africa; others would arrive in the ice huts of the Arctic; some would come into the slums of the city; some into the centers of wealth and culture. Who can doubt that their careers would differ accordingly?

But one great difference there would be. Whatever the career undertaken, it would be carried out with force, efficiency and judgment. The avoidable blunders and disasters that are due merely to lack of natural insight, to stupidity, would be lacking. What can be learned by experience coupled with judgment would be learned rapidly and well. The difference thus made would be very great. It would mean a rapid advance, a rapid improvement, in the state of humanity.

Next think of a world populated by a set of identical twins all dull and stupid; replicas of the stupidest person you know. Such a world would differ greatly from the one just imagined. But if the original material of these twins were not too bad—so as to result in actual feeblemindedness—they would attempt in some way to do the varied work of the world. It would be ill-done and the world would be in for even more troubles than at present. Doubtless civilization would decay, would gradually break down. Perhaps in a few generations mankind would disappear; or there would remain but a few, living in degradation. The most important difference between individuals derived from different combinations of genes lies in the fact that some can adapt themselves to almost any situation, can take up almost any career, while others lack this power of adaptation. These latter are the stupid persons; with them as the only inhabitants, the state of the world is hopeless.

It is an interesting diversion to imagine other worlds made up of particular types of identical twins. Suppose all were replicas of some great musician: a Paderewski, a Beethoven, a Wagner. Would all devote themselves exclusively to music? Doubtless not. There would still be all the main differentiations of the present world. Or conceive a world in which all were identical as to genes with some gangster, some "Gyp the Blood" or the like. What would be the situation? No one knows; but there is nothing in biology that says that all would be racketeers, gamblers, gangsters; nothing that says that there might not be many respectable citizens; nor that the world would be totally diverse from what it now is.

These quaint prints are reproduced by permission from Arnold Gesell: The Guidance of Mental Growth in Infant and Child. Macmillan, 1930

And so one may think of a world of identical poets, of identical ditch-diggers; or of replicas of any of the thousand other types that are given by diverse combinations of genes. Every such world would show differentiations; every one would show many persons of diverse trades and occupations; of diverse habits and conduct—although there would be no differences due to heredity. But every one of these worlds would differ much from every other, depending on the diverse constitutions with which its inhabitants began their careers.

And then to form a picture of the world as it is, think of all these different possible worlds jumbled together, with every different type of gene combination; each type subjected to the varied and changing conditions that the world offers. Carry this jumble to its extreme, in which every gene combination is represented by but one single individual (save in the rare cases of identical twins)—and you have the world that we are now confronted with. Every individual differs in his fundamental constitution from every other. But every individual, save those with very defective sets of genes, has within him the possibility of many (*Continued on page* 70)

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THE PALMISTRY OF LIGHT

Radiograph by Professor Contremoulin. From a special number on photography of Arts et Métiers Graphiques, Paris

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The Telltale Skeleton

By T. WINGATE TODD

IN times when a study of the human body was still the snatching of information haphazard by clandestine means, carved miniatures of skeletons in ivory were prized as atomies. They served to educate apprentices of medicine in a knowledge of the bones. Their carefully sculptured outlines taught too much, for they inferred an immutability in the human framework which comes only as life escapes. A dead skeleton is as permanent as any relic of mankind can be: a living skeleton shares the instability of all flesh and bears an imprint of conditions met in life. When we hear that tuberculosis and rickets were rare but rheumatism very common in ancient Egypt it is because the skeletons unearthed in countless tombs betray this information by their markings. When we learn that the ancient basket-makers of Arizona and New Mexico rarely lived to a ripe old age it is because the record in the bones registers an early death. These are the clues which suggested to a number of Clevelanders a new method of investigating human growth and health. The introduction of x-rays provided a means of recording, during life, the information inscribed in living bones. That sensitivity which makes, of the skeleton, a slate whereon are scribbled the records of life's adventures is a very recent discovery. But it is now so well understood that one can make certain quite definite statements which are as striking as they were unexpected.

The architecture of the bones is a tracery of lime held in definite combination by living tissue but regulated in such a way that health, disease and injury modify its characteristics. In rickets some of this tracery temporarily disappears. In infantile paralysis the tracery becomes permanently defective in the affected limbs as it does in the bony stump of an amputated arm or leg. A fractured bone shows reduction of its contained lime and old age is significantly registered in the skeleton by so marked a loss of architectural calcium that the bones are brittle and easily break.

It is not simply in those gross features however that the telltale skeleton gives us information on the story of life. While the child is growing he is adding to his lime store, absorbing the calcium from his food and distributing it throughout his skeleton. Much of the calcium in early life is got from milk but it cannot be properly handled by the body unless vitamin D is present also. Cod liver oil and sunshine are the sources of this mysterious agent. Their importance to the growing child is therefore evident. Milk also, as a calcium source, must be supplied in really adequate amounts.

All through babyhood and up to the age of four years this calcium store grows very rapidly. About the latter age it attains its permanent or adult relationship in the body. But since the bones keep on growing in size until, say, fifteen years in girls and eighteen in boys, the calcium store must be constantly increased. Thereafter the store needs only to be maintained. And at about fifty the total bodily calcium begins to decrease: less is added than is lost in the vital processes of life. Fractures then are increasingly frequent and repair increasingly difficult.

As yet we know little of the role of calcium in the body. A certain amount is "fixed" in the great architectural patterns of the bones. This is stable in contrast with the "floating" calcium store which is deposited as the finer tracery of bones and is readily removed and transferred from site to site as needed. Rickets and senility

The Brush Inquiry

ETCHED in bone, the life histories of 2500 children lie in the archives of the Brush Foundation in Cleveland, recorded for him who may read on tens of thousands of x-ray films. It is from these that is drawn the story of the body's trials and triumphs told in the accompanying article by the Scots physician who is director of the Foundation and professor of anatomy at Western Reserve University. Dr. Todd's early research in this field considered the findings in bone shown in the skeletons of man and other mammals in the Hamann Museum of Western Reserve and collections in London, New York, Washington and Chicago, and the tales told by x-rays of the bodies of dead children. It soon became evident, however, that the full story could be known only through repeated pictures showing the development of the same child at successive periods, and of groups of children at different ages. Hence with the cooperation of the Cleveland Health Council, the schools, social agencies and hospitals of the city, it has been possible to radiograph again and again healthy and sick children of all ages, from babies in nursery schools and day nurseries up to the incoming students of the Medical School of the University. Parallel social and psychological studies of these children, under the direction of experts aided by the University's graduate students, give added facts to interpret and illumine the exact record seen in the bone. This inquiry is part of the Brush Foundation's broad program of research and education—the latter through lectures, scientific conferences, publications and a library to make known to parents and other people what science can tell to guide the betterment of the race. In the terms of the deed of gift of the late Dr. Charles Francis Brush, in memory of his son, its end is "that children shall be begotten only under conditions which make possible a heritage of mental and physical health, and a favorable environment." "We do not seek to create man anew," declares a recently published statement of the director. "The popular theme of discovering a well-begotten type and attempting to construct all mankind in that image is the despair of the honest eugenist, the opportunity of charlatans. We take the child and analyze him as best we may. We watch the moulding influence of life upon him. Damage which we have seen in progress we may circumvent in others; and help them to attain a maturity of greater promise.

"As our knowledge increases, it is our intention to spread it as widely as possible, but not to attempt coercion, compulsion or legislation. We believe the problems of mankind can be solved by imagination, resourcefulness, courage, toleration, a frank recognition of the variety of experience and a realization of the futility of argument. Our vision for the future is one of a race, master of its fate, through understanding its heritage and thoughtfully controlling its own progress."

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usually affect only the floating calcium and leave untouched the main architectural patterns. But some diseases modify these also and result in misshapen bones and crippled bodies.

In all that has been said so far we are involved in the complex chemistry of bone. Adequate understanding is to be expected only after years of patient investigation. There is another and far simpler role played by the calcium in bones, and it is to this role that we owe the enlightenment of which I would chiefly speak. Calcium, being radio-opaque, picks out on the roentgenogram the areas in which it is deposited.

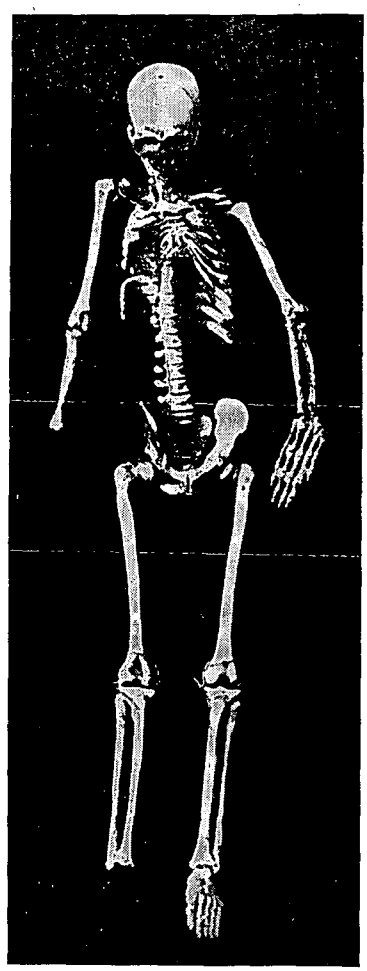
When the baby is born many of its bones have no calcium in them at all. They are formed of cartilage or gristle which is penetrated and replaced by calcium or true bony substance as the child matures. The bones of the wrists and ankles are good examples. A roentgenogram will show the extent to which the cartilage is replaced by bony tissue. At the ends of the long bones in the arms and legs are similar masses of cartilages which, being attached to the shafts or main stems of the bones, are known as epiphyses. These also become transformed into bony tissue but they do not remain independent like the cartilages of the wrists and ankles. They unite firmly with the shafts during our second decade.

I said just now that this replacement progresses as the child matures. I did not say, "as the child grows older." Time is significant only in so far as it measures progress. The lapse of years does not necessarily imply the increment of age.

We have grown accustomed to recognizing in gross measures of height and weight, in muscular power and character of skin, the indications of well-being. We say the child is well grown or well nourished and sometimes that he is well developed. But there is a difference between development and growth. When our own children come home from school bearing a card which suggests that they are underheight or underweight we are apt to be resentful because then and not until then do we realize that even average height and weight do not really measure the developmental progress of the child. Measures of development we have not had, except those which, appearing in voice and manner early in the second decade, announce approaching maturity. It has been reserved for Cleveland through the combined efforts of Health Council, Board of Education and Brush Foundation, to make the first demonstration of reliable measures of development. And we have found these in the bones. The incredulous may well ask how the skeleton can indicate development of the entire body. Intimately bound up with the body development is the penetration of calcium into the cartilages of which I have spoken. And equally intimate is the relation of bodily development to the final union of the epiphyses with the long bones of the limbs.

Time, I have pointed out, has no constant value in the development of a child. He grows in spurts. Phases of slow developmental progress are followed by sudden blossoming. The chemical mechanisms of the body themselves, successively maturing for action, modify the physical characters and behavior. We call these mechanisms "booster stations." And since it is known that failure of a major booster station to come into action is registered in skeleton as well as in external form and conduct we begin to see that minor deflections of normal developmental progress in the bones are also evidence of maladjustment of bodily mechanisms.

In the bony penetration of the cartilages which I have mentioned, we find in one child retardation, slow progress in point of time, in another child unusual speed. We find that better-class children are usually developed about nine months in advance of those in poorer circumstances, though there are exceptions. And so we come to realize that the more rapid progress does not mean precocity but merely a more complete fulfilment of capacity. This gives us a new hope. Again we examined by our roentgenograms the bones of retarded children and we found scars and marks upon the shafts which, by patient inquiry, we learned to associate with minor, remediable and even unnoticed defects in health and family fortunes.



Atomy or miniature skeleton carved in ivory. Given to the University of Cambridge by John Banister in 1591. (Courtesy of Dr. W. L. H. Duckworth.)
Two-thirds actual size

The reading of the roentgenograms which carry this tracery of fortune is a somewhat technical procedure, but it is not very difficult. Indeed it provides the observer with a thrilling occupation and binds our medical and sociological investigations into one compact study.

Looking over our records it is not difficult to find instances which will make this discussion clear. Marian is a little girl of three, the youngest of four children. Her father, who has a mental age of eight years, is now serving a penitentiary term for burglary. Her mother is struggling valiantly to keep that little home together on $2.70 a day earned in a Cleveland factory. When we examined the roentgenograms of this child we found the bones so full of scars that nothing but a continuous experience of ill-health and inadequate nurture could account for her dreadful developmental mutilation. The social record carries us no farther back than one year. But that year starts with measles, rhinitis and malnutrition. During the ensuing twelve months, Marian had whooping-cough, boils, rashes on the skin, bronchopneumonia, enlarged tonsils and adenoids. Almost every social agency in town has seen her. What kind of future lies before her? I shudder with apprehension at the thought of this child going forward to meet life so crippled and broken, wondering the while at the marvelous vitality which can go through this experience and survive at all.

That is a clear record of the influence of ill-health upon developmental progress. But ill-health is not the only factor which can make its imprint on the growth record. Here is Ruth, now three and a half, living with her mother, a woman of courage and spirit. Ruth's nutrition is good. She has attained average height and weight for her age. But in her

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Figure 1. X-ray of hand from boy six months old (SS 989). Two wrist cartilages have developed bony centers at this age. Compare figure 4

bones she carries the scar of some deep wound occurring when she was two years old. And this is what we learn. The father had been married twice before, divorced each time, and has now married Ruth's mother. Ruth herself is the representation of his third family. And surely we ought to do something about that! When Ruth was two years old her father deserted a third time and has not been seen since. The resulting domestic confusion marked the very body of the child. Is not this visiting the sins of the fathers on the children with a vengeance? If we did not see it in case after case we could scarcely believe that sickness of the spirit could leave so clear a trail.

But there is hope. Give the child a fighting chance and he will outdistance our most sanguine expectations. Sorrow and suffering in the life of a child are quickly covered up by joy and slowly but surely the wounds will heal. Growth in height and weight again occurs. The defects are made good and the skeleton records the restoration of normal developmental progress.

Figure 3. X-ray of hand from boy of thirteen years (SS 359). All wrist cartilages are transformed into bone at this age

It is the young and rapidly growing child who is most sensitive to the influence of sickness and misfortune. Let me illustrate this by reference to a family of three. The oldest, a boy of eleven, has a development, registered in his skeleton, of twelve and a half years. His height and weight confirm his skeletal record which, were it not for the birth certificate, would make us doubt the statement of his age. Just why he is older than his years does not concern us now: it is often a familial characteristic and we shall return to that problem later. His brother is nine. Developmentally and in his growth he is not so far accelerated as the older boy. This lad is but six months advanced. Something which his brother escaped has hit him with unmistakable directness. There is a little sister of eight. But she is small and very much underweight. Her skeleton shows her actually retarded in development. Whatever hit her younger brother has played havoc with her.

Figure 2. X-ray of hand from boy four years old (SS 1665). Five wrist cartilages have now developed bony centers. Compare figure 4

Now this is the family history. A flighty and despondent mother who cannot listen to any helpful advice. A drunken father. A three-roomed home. A boarder. Jealousy and threatening with ultimate tragedy when the little girl was four years old. The boarder shot and killed. The father murdered just before his trial. The mother transferred at her own request to the psychopathic hospital. The children thrown on charity. Marvelous human vitality by which the oldest child escapes the injury of body and soul which struck and wounded the younger boy and

(*Cont. on page 77*)

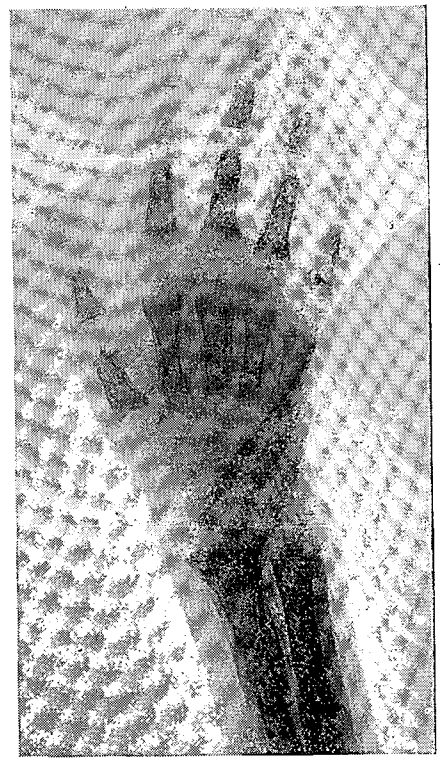

Figure 4. X-ray of hand from boy of four years (1950). In consequence of disease contracted early in life the bones are abnormal in form and only two wrist cartilages have developed bony centers

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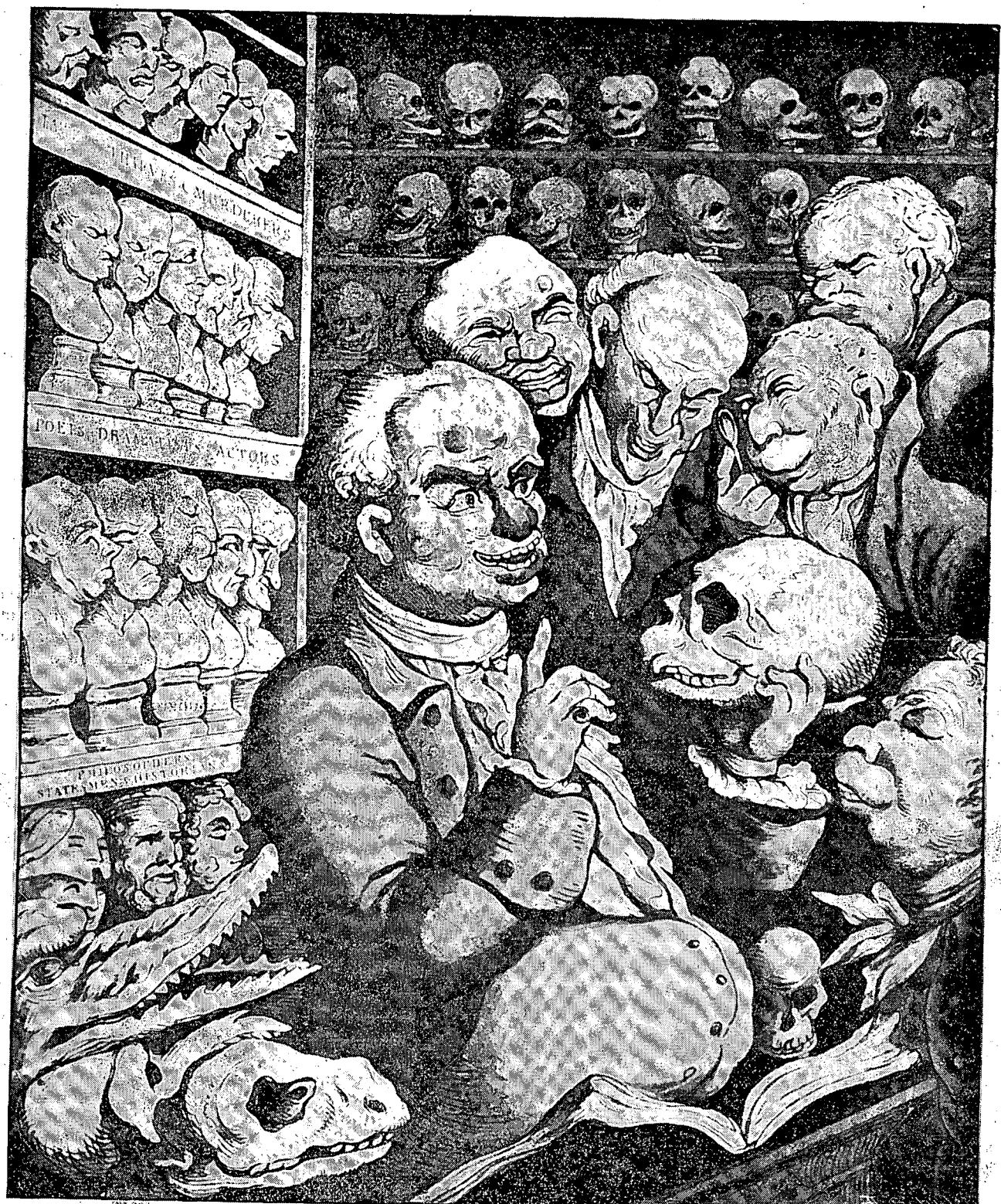

A LECTURE BY DR. GALL — PRINT BY ROWLANDSON

Most of us can recall the days of the traveling phrenologist, and how we, awed, went home and hopefully felt our bumps. Dr. Gall (it was his name—Franz Joseph Gall), the originator of the belief that talents and temperament could be deduced from the external appearance of the skull, had no easy time: when he was not the subject of ridicule, he was set upon as an atheist. Rowlandson, his contemporary, caricatured him a number of times. Our satirists today have a greater respect for scientific speculations. Perhaps a generation that has learned to see facts supplant marvels is wary of scoffing

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What We Call Intelligence

By FRANK N. FREEMAN

SOME writers have maintained that it doesn't matter what we call intelligence. We may as well call it X as anything else. We can measure electricity, the argument goes, without knowing the nature of electricity; just so, we can measure intelligence without knowing in what it consists.

This argument sounds plausible but it overlooks the fact that people do speculate about the nature of intelligence, laymen and psychologists alike; and it overlooks the further fact that our conception of what intelligence is has a marked influence on our notion of the origin and causes of intelligence as well as of what it is good for. Our interest in intelligence is not mere idle speculation. The nature of intelligence is related to the possibility of the improvement of intelligence. It is of vital importance to both the individual and to society to know whether intelligence can be improved, and, if so, how it can be improved. The improvability of intelligence in the individual is consistent with some conceptions of intelligence and inconsistent with others. If we have a conception of intelligence which is inconsistent with the notion that it may be altered by education or other environmental influences, we will be inclined to discount the evidences of change in intelligence. A well-known writer once remarked, after listening to a presentation of the evidence that the intelligence of a number of children had been changed by their home and school environment, "But, intelligence being what it is, I do not see how it can be changed by the environment."

Our thinking about the nature of intelligence often approaches suspiciously close to begging the question. We insert the idea of unalterability into our conception of intelligence in the first place and then when evidence of a change in intelligence is produced we conclude that our measures must have included some other ingredients than intelligence because, forsooth, intelligence is not subject to change.

It will be worth while to review briefly the history of thought on this matter. The conception of intelligence as being a fixed characteristic of the individual, unaffected by the conditions which surround him or by his experiences and activities, has several roots. It is undoubtedly in part the outgrowth of the denial of the psychological and educational theory of the transfer of training, for the improvement of intelligence is a kind of transfer of training. It is also an offshoot of that form of the doctrine of heredity which holds that mental and physical characteristics as they appear in the mature individual are inborn and determined by inheritance. In regard to these two bases of a conception of fixed intelligence it is only necessary to say that both have been shown to be untenable in their extreme form. We are here especially interested in a third root, namely, the interpretation of intelligence tests. The bearing of intelligence tests on the interpretation of intelligence merits more detailed comment.

When Binet invented the first serviceable intelligence test he was guided in his work by the practical purpose of classifying children according to their general intellectual maturity and their ability to perform scholastic tasks. He apparently did not set out to measure a fixed entity, nor did he believe that intelligence existed as a fixed entity. This belief grew up in the minds of Binet's successors. They noticed the fact that scores on intelligence tests are relatively consistent when the tests are given repeatedly to the same individual. They concluded that the tests measured inborn and native capacity, and then began to speculate as to what the nature of this native capacity might be.

The descriptive character of intelligence was variously thought to be the "power of good responses from the point of view of truth or fact," the "power of readjustment to relatively novel situations," the ability to carry on abstract thinking, the ability to make associations among ideas or the ability to learn. Whatever the description of the ability might be, it was usually conceived to be an inborn ability or capacity. The notion that these abilities are inborn does not arise from the essential character of the abilities themselves, but grew out of the fact that they were regarded as descriptions of intelligence and that intelligence had come to be thought of, on insufficient evidence, as fixed.

THIS is the point of view which prevailed when recent investigations of the influence of the environment on intelligence contributed new evidence and required a reexamination of the current beliefs in the unalterable character of the IQ. It now appears that children of normal parents who are deprived of the usual schooling fall progressively below children who go to school, on intelligence tests as well as on scholastic tests. On the other hand, children of indigent and irresponsible parents, who ordinarily test about fifteen points below the average, when put in satisfactory homes early in life stand about as high on intelligence tests as the average child. Furthermore, children placed in superior homes stand decidedly higher than do those, even members of the same family, who are placed in less favored homes. Children who grow up in communities where educational and social advantages are well developed start in infancy at the same level as children in communities where provision for intellectual development is meager, but outstrip their less favored fellows as they advance in years. Rural students who enter a city highschool start out well below their urban comrades but make up part of the difference before they graduate.

Such facts as these, which are assuming considerable proportions, would seem to constitute reasonably satisfactory evidence that intelligence is modifiable. The notion that it was unchangeable was derived in large measure from early findings of intelligence tests. When now the scores of these same tests seem to be influenced by education and environment, one might suppose the evidence of the modifiability of intelligence to be as good as, and in fact better than, the earlier evidence of its fixity.

But this is not the reaction we commonly meet. The most frequent criticism of such studies as have been mentioned

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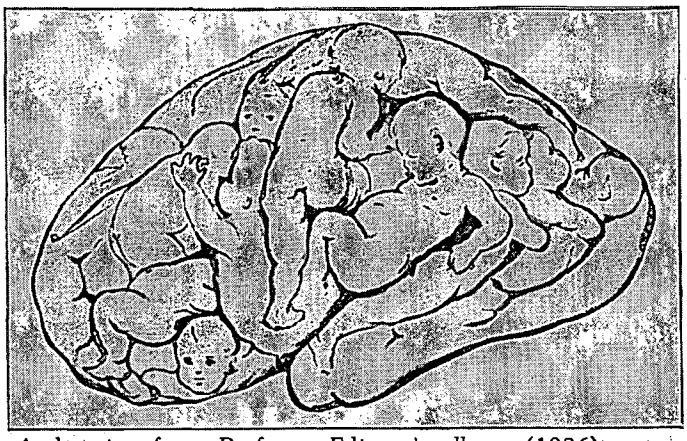
is the objection that perhaps after all the intelligence tests are defective and measure something else besides intelligence. It is pointed out that some of the gains on intelligence tests can be accounted for in specified ways. Quite definite amounts of practice effects have been determined. Such gains are regarded as errors in the measurement of intelligence and it is inferred that the gains are all of this sort. In other words, the part of the test which is not subject to change is a true measure of intelligence and the part which is subject to change measures something else. The notion of fixed intelligence grew out of the results of intelligence tests, but when these results appear to lead to a different conception the conception resists change and the tests themselves are subjected to a revised interpretation. The conception of intelligence has acquired a sanction which is independent of its foundation, and when the foundation is removed it remains suspended without any visible means of support.



A drawing from Professor Edinger's album (1886), reproduced in Die Karikatur und Satire in der Medizin

The case, then, stands thus. When intelligence tests were first used the scores which children made upon them appeared to remain stable and fixed throughout such periods of time as were investigated. From this apparent fact it was inferred that intelligence itself remains unchanged and the concept of a fixed intellectual capacity was developed. When the preliminary findings on the tests were found to be in error and marked changes in test scores were found to occur, the fact was ascribed, not to a change in intelligence, but to error in the tests. Intelligence came to be thought of, not as the ability which is represented by performance on tests or some other type of performance which can be investigated and described by empirical methods, but rather as some sort of hypothetical characteristic of the individual's mental make-up which remains fixed through all the vicissitudes of changing experience and education. This hypothetical factor of intelligence is supposed to be one of the conditions underlying the performance of intellectual tasks. It cannot, however, be measured in its pure state by any tests we now have, because the scores on all our tests are subject to change, and intelligence, by definition, is unchanging.

We may next inquire what there is about the notion of intelligence which makes it seem necessary to regard it as unchangable and whether it is inevitable that it should be so regarded.

It seems probable that the notion that intelligence is necessarily fixed is due, in part at least, to the accidents of language and of the imagery which is associated with it. It is common practice to designate abilities which are believed to be determined largely by inheritance as capacities. Thus intelligence is described as intellectual capacity. The term capacity brings to mind the image of a vessel which holds a specified amount of material. This figure is sometimes actually used to describe intelligence, as when it is remarked that you cannot put two quarts of information into a mind of one-quart capacity. Assuming the pertinence of this figure, a mind having a capacity of one quart might be partly full or completely full, but there would be a definite limit to what it could hold, and when this limit was once reached its possibilities of development would be exhausted. The capacity of the mind is supposed to be measured, albeit with only approximate accuracy, by intelligence tests.

This terminology and figure of speech may serve a purpose as a rough and ready way of describing intelligence, but it is at best very crude and inaccurate; and it is a positive menace when it serves to crystallize opinion concerning the nature of intelligence and the possibility of its modification. It is one thing to conclude from direct evidence that there exists a characteristic or set of characteristics in the organism that is constant throughout life, or even to set up an hypothesis that such a characteristic exists for the purpose of explaining observed facts. It is quite a different thing, however, to hold to the idea of a fixed intelligence because we have grown used to thinking of it in terms which suit the idea. It is to be feared that this is what most of us have done.

It is the chief purpose of this paper to suggest other ways of thinking about intelligence to conform to the observed fact that intellectual performance varies. A conception which fits the facts must account both for individual differences and for the possibility of changes in the individual's own performance as a result of specific influences. An impartial survey of the evidence does not justify us in attributing the individual's ability wholly to education or early influences any more than in denying to these any effect. In fact inborn differences are probably considerably greater than those which are due to environment. But we do not need to attempt to estimate the relative weight to be assigned to these two factors. All we need to do to serve our present purpose is to provide for both of them.

THE nature of intelligence is sometimes thought of in terms of psychology or of behavior and sometimes in terms of physiology. In terms of psychology intelligence is described as consisting of those activities and mental processes which we regard as intelligent. The descriptive account may develop into a systematization of the observed facts and a derivation of principles and generalizations. But in such cases we are still dealing with facts of observation. The physiological theories of intelligence, on the other hand, depart more widely from facts of observation and deal more largely with remote inferences from the facts. When, for example, Spearman advances the physiological hypothesis that intelligence is measured by the store of nervous energy available to the individual he is admittedly offering an explanation of chiefly theoretical import. Similarly Thorndike's hypothesis that intelligence is based on the total number of neural associations which can be formed in the individual's nervous system concerns the underlying condition of intelligence but not the nature of intelligence itself. The same applies to Lashley's studies of the relation of the total amount of brain substance to the ability to learn.

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These theories and findings might, if they are accepted, predispose one to the view that the individual's maximum intellectual performance is a relatively fixed quantity, but there are at least two reasons why this is not the best source of information on the problem. First, our knowledge of the functioning of the nervous system and of its relation to intelligence is less direct than is our knowledge of intellectual performance itself. Second, even if we should accept the apparent implication of some of these theories that the character of the nervous system does set somewhere a limit to the individual's intellectual performance, we have no evidence that such a limit constitutes an effective bar on the improvement of one's intellectual performance. There is no reason to suppose that any test that we have devised or could devise gives an indication of where this limit is set. There may be vast unrealized possibilities in every individual. All we can measure is the extent to which the individual has realized his possibilities, not the portion which may be as yet unrealized.

WE turn then to a more direct answer to our question, what do we mean by intelligence? Intelligence may be described in brief as the ability and perhaps the disposition to perform certain specified types of activity. It does not include all kinds of ability but only certain kinds. The distinction between intellectual and non-intellectual abilities will be drawn in a moment. The inclusion of dispositions is made for several reasons. The effectiveness of intellectual activities depends on certain dispositions which are closely associated with intellectual abilities as well as on the abilities themselves. In our tests of intelligence we are not able to distinguish clearly between the one and the other. Along with the development of intellectual abilities has gone the development of corresponding intellectual dispositions appropriate to them. However, abilities are primary and dispositions secondary, and abilities represent the core of intelligence.

Intelligence is observed and measured only by recording and estimating the merit of its manifestations. We form the idea of intelligence by observing a variety of activities, distinguishing between successful and unsuccessful activities, and distinguishing further between the kinds of success which are to be attributed to intelligence and those which are due to other kinds of abilities.

Some types of abilities which are necessary for successful activity would hardly be included in any notion of intelligence. For success in some types of achievement muscular strength is of prime importance, but this is clearly outside the realm of the intellectual. It is not quite so evident that keenness of senses or quickness and accuracy of movement should be ruled out. They may sometimes be contributing factors in intellectual attainment. But it seems best, for several reasons, to exclude them too. Tests of these abilities show that they have little correlation with success in complex activities, such as academic scholarship. Human beings, who are certainly more intelligent than lower animals, may be inferior to them in sensory and motor abilities. Sensation and movement are important in dealing directly with the physical world. The genius of man, however, consists in the development of an indirect, and in the long run a more effective, way of dealing with the world. In this indirect way man uses ideas. Intelligence lies in this realm of ideas.

Intelligence, then, consists primarily in the ability to think, and the degree of intelligence possessed by an individual is measured by the effectiveness of his thinking. In thinking we rearrange the world of things as they are presented to us by our senses, and in so doing formulate ideas and principles. One side of this process is analysis, selecting some particular aspect of the surroundings and giving especial attention to it. The other side is recognizing relations, or thinking relations which extend beyond things which are perceived by the senses. Thus we recognize relations of identity or similarity, of incongruity or oppositeness, of greater or less, of proportionality, of quality in general, of classification, of cause and effect, and so on. We describe a person's ability to think by saying that he can put two and two together. The genius is the person who can see relations which are so out of the ordinary or appear to be so remote that they do not occur to average persons. His operation is no different in kind, however, from everyday thinking.

If this is what we mean by thinking, our next problem is to determine how we measure the quality of thinking. What is the distinction between poor or ineffective thinking and good or effective thinking? There are several distinctions. One obvious mark of good thinking is quickness or speed. Other things being equal, the person who can perform a given intellectual task more rapidly than another is the more effective. This characteristic is commonly represented in intelligence tests by the imposition of a time limit on the completion of the test. A second mark is the directness and accuracy of thinking. In some cases, as in mathematical thinking, accuracy is an obvious requirement. In others it is not so easily measured, but it is nonetheless important. A third characteristic, which is perhaps more questionable but probably ought to be included, is the range of problems which can be dealt with effectively. A person whose ability is rather narrowly specialized may be said to be less intelligent than is one who is equally competent in a large variety of fields. There seems to be some evidence of such specialization, and hence this element may be included pending further investigation. Finally the degree of intelligence depends on the degree of difficulty or complexity of the problems with which one can deal successfully. Difficulty may be measured in terms of the percentage of persons who can perform a task and complexity probably represents the chief cause of difficulty.

IF intelligence consists primarily in these or similar characteristics of thinking can we draw any inference concerning its improvability? Such an inference should not be substituted for actual evidence that intelligence does or does not improve. It should be used only as a possible antidote to the common conception which predisposes many people against the acceptance of evidence when it is presented, and as a rational or at least conceivable explanation of improvement when the evidence seems to indicate that it takes place.

It is at least conceivable that intellectual training may improve intelligence as it has been defined. The pace of the mental operations may very well be influenced by practice, and mental alertness probably varies considerably with appropriate training. The accuracy and facility with which one thinks is doubtless affected by the degree of concentration of attention; and while mind-wandering or concentration are doubtless governed in part by the emotions they probably are also subject to control which can be built up by training. Effective thinking may be promoted by the acquisition of general or special forms of technique. The recognition of common fallacies, such as that of begging the question, may set up danger signals and steer (*Continued on page* 66)

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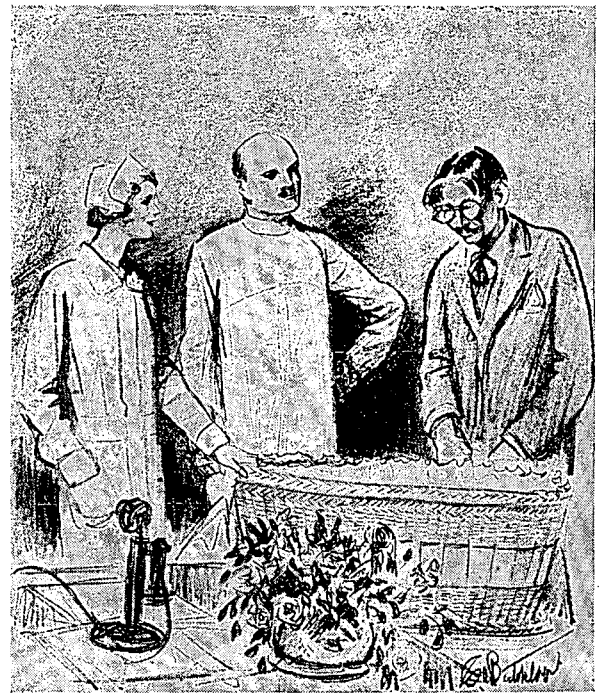
George Clark in The Chicago Evening Post

"You see, professor, you can hardly classify him as you would a less talented child."



C. D. Batchelor in The New York Evening Post

"I expected a boy. But anyway, Doc, that's the color I wanted."

Lewis Baumer in Punch

PHOTOGRAPHER: *"Hm—it makes rather a stiff composition. You—er—haven't a third by any chance?"*

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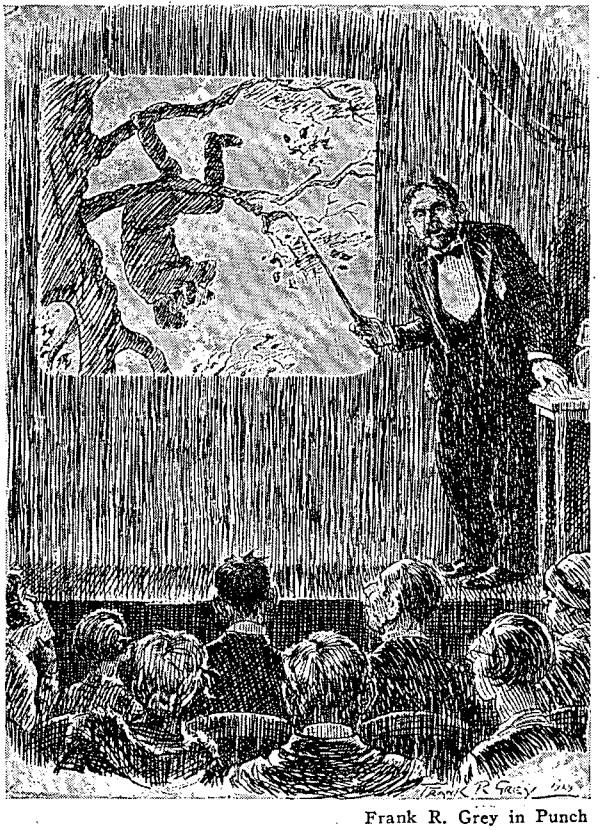
WE HAVE NO ROWLANDSON OR DAUMIER, BUT—

Evans in The London Bystander

FIRST MAIDEN AUNT: *"To think that those young persons and their kind represent the motherhood of the future."*
SECOND MAIDEN AUNT: *"Yes, my dear, but, thank goodness, not very often."*



Frank R. Grey in Punch

EXPLORER (having omitted to glance at the screen): *"Here you see me studying the chimpanzee which misguided scientists erroneously declare to be the forefather of man."*

William Steig in The New Yorker

"Don't bother me! I don't know nothing about sex."

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The Pattern of Personality

By ABRAHAM MYERSON

PERSONALITY is the organizing of the mental life of the individual into a compound pattern made up of his powers of thinking, feeling and doing. Just as a picture has its artistic value not through color, form, or pattern but through the organization of these qualities so that something new and beautiful is added to the world, so personality is not the sum total of feeling, intelligence, and act but is a function of the interaction of these phases of mentality. Thus the types of personality become almost infinite as we combine the many grades and specialties of emotion, intelligence, will, and act. For example, the whole personality may be centered in a successful drive around some point of superiority, such as a special beauty, agility, strength, or intellectual capacity, just as it may be wrecked around some point of inferiority, some excessive feeling, aberrant instinct, or focal failure of inhibition.

It is a truism to say that personality is laid down by heredity, that what we achieve in the organization of our trends is dependent on the nature of our germ plasm. This must be true. We cannot reach what we have not the capacity to reach, but the direction and form of our trends are given by the environment and we can never tell while viewing any individual characteristic how far its nature has been determined by heredity and how big a part environment has played. Feeling, thought, and deed are social products and are not created in a vacuum. Each individual is born into a home, a race, a nation, and a time, and from the start of his life there is a determined, even fierce, pressure put on him to make him feel, think, and act in conformity with the large and small groups with whom he is in contact; to inhibit in him those trends which are out of line with theirs, to foster those which are approved. To say that environment is not hugely important in the evolution of personality is to state that the home, the school, the pulpit, the book, the newspaper, the friend and the foe, the judge, prison, law and religion, tradition, social approval and disapproval, praise and blame—to say nothing of the economic structure, the climate and the food—are not of importance. For these are but a few of the environmental forces operating from the cradle to the grave, making and marring personality, organizing and disorganizing it.

To keep within the limits of this article, I must leave out of account the details of the subject and state briefly some general governing principles which can be verified by the simplest and most everyday observations.

The first of these general principles is the organic foundation of personality. Personality results from the interaction of nervous centers, viscera, and internal glands. Even from the muscles and joints flows an inner stream helping to create mood and action. Every case of myxodema (i. e., of deficient thyroid secretion) eloquently proclaims the organic nature of personality. Every brain injury and disease confirms this thesis. The strong hold which alcohol and other chemical agents have upon the life and habits of man, scorning laws and prohibition, rests on the organic chemistry of personality. Men drink that they may think, feel, and act differently than is their wont; that they may throw off one personality for another. The most idealistic philosopher denies the validity of his belief of the independence of personality when he takes a cup of coffee to renew his energies or takes a laxative pill in the correct belief that a sluggish bowel is impairing his zeal and optimism. Those who have seen a normal child change from amiability and conformity to an Apache after an attack of encephalitis know that for practical purposes the personality is organically based and that the environment can mar it, regardless of its hereditary capacities.

Courtesy Frank K. M. Rehn Galleries, New York

ATTA BOY — *By George Luks*

The second general principle is what I can best state in a negative way as the "illusion of individuality;" the belief that one is separated from the rest of the world by his skin. This illusion is created by the naive experiences of the child, who comes to the conclusion quite naturally that the skin is the outer, because it is the visible, boundary of the self. The physical facts of life contradict this illusion most emphatically. Could one see oneself as he really exists, one would see a stream of gases passing from the environment into the innermost recesses, into every cell of the organism, becoming a part of that organism, exploding the tissues and then passing out in a reverse stream of gases back to the environment. If we visualize the process of eating for what it actually is, we would see the energy of the sun becoming in-

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corporated through the magic of the green leaf into the tissues of plants and the flesh of animals so that in reality eating becomes the incorporation of Nebraska, of Brazil, of China, of California to say nothing of the farms nearer home, into ourselves.

What is true in a physical sense is just as true, though not so easily verified, of our mental selves. Language in its aspects of speech and writing have hugely extended the environment of man so that we now come under the influence of the dead and the distant as well as of our contemporaries and neighbors; so that heaped up stores of knowledge become important environmental facts in respect to their accessibility and non-accessibility to us. Certainly it makes a great deal of difference if there are schools in a community which permit me to pass along from one stage of knowledge to another, because if there are no schools, I can only acquire the knowledge that is borne by word of mouth; i. e., I am illiterate. Books are not only informative; they direct purposes, they organize thought, emotion, and deed. A book may bring me into such a contact with someone long since dead that I will inhibit my instincts, recreate my purposes and profoundly alter my emotional responses. One need only cite the Bible.

Courtesy Kraushaar Galleries, New York

THE DREAM RIDE *By William J. Glackens*

In other words, there is a constant passage of the environment through us in the form of the views and attitudes, the knowledge and personalities of the people we meet and the people we read or hear about. How deeply such a book as Plutarch's Lives has affected mankind can never be known but its accessibility and non-accessibility was critical in the fate of many personalities. The praise or blame of those around us may whittle down a trend until it disappears or may fan into life and full vigor an attitude or aptitude. Thus each personality becomes permeated, created and recreated, by the feeling, the thoughts and the deeds of the environment, and the nature of the specific environment to which each of us is subjected is of great importance in the evolution and organization of our nature.

This communicability of personality, I believe is of special importance with regard to the emotional life of man or to use a broader term, the effective life. Sympathy and antipathy are constantly present in human emotions. Each of us is immersed, so to speak, in an emotional pool. In the earlier days of our life that emotional pool is the home, and the home may create unhappiness, ease, freedom, inferiority feeling, fear, rebellion and a dozen and one states of feeling of profound importance in the determining of the future of the individual. In the later days, there is a spread of emotion which makes it of importance to us all when any group in the community is depressed or oppressed. There is a spread of feeling from slum to palace whereby the misery of one becomes the ennui and the unrest of the other.

In a more direct and detailed way the nature of the emotional life of the home, the character of the psychological pool, as one may call the home, is from all we can see and learn of tremendous importance as it interpenetrates the personality of the child. Even the accidental contacts, those which, so to speak, are unpredictable and unavoidable, are of more influence than they have been credited with. By an accident of a physical kind, one may step from security and health to insecurity and illness. By an accidental contact of a psychological type, one may be swept out of the accustomed normal channels for the personality into disaster. Conversely an accidental contact may arouse dormant power of the personality and bring it into peace and usefulness.

Habit formation is in a large measure laid down by the environment, and the direction in which the energy flows is in a large measure environmental. Mankind lives in a community, which as our civilization has developed instruments of transportation and intercommunication, has made us more compact. This compactness has made us more of an organism so that each individual is now subject to far more influences directing his personality than ever before. In other words, the environment has become infinitely larger and more potent with the advancement of culture and the development of the machine age.

AS one walks the streets of a city like Chicago, a very interesting confirmation of the value of the environment in the creation of personality is evident. One sees transplanted Slavic peasants, to take one immigrant type, stalwart, heavy featured, settled in their beliefs and in their ways, living with little of broad environmental interest, leading a parochial existence, carrying on under the influence of age-old traditions—and then one sees their American-born descendants, alert, nervous, unsettled in tradition, living the typical American life of seeking excitement and advancement, as different from their ancestors as an American is different from a peasant in some Polish village. The same change can be seen in the American-born descendant of the Irish peasant and the American-bred descendant of a Ghetto dweller.

This brings into the situation such questions as whether or not woman is different from man psychologically and in personality through the biological differentiation of sex or because of different breeding and training. I cannot answer this question. Undoubtedly biological differentation is associated with fundamental psycho- (*Continued on page* 66)

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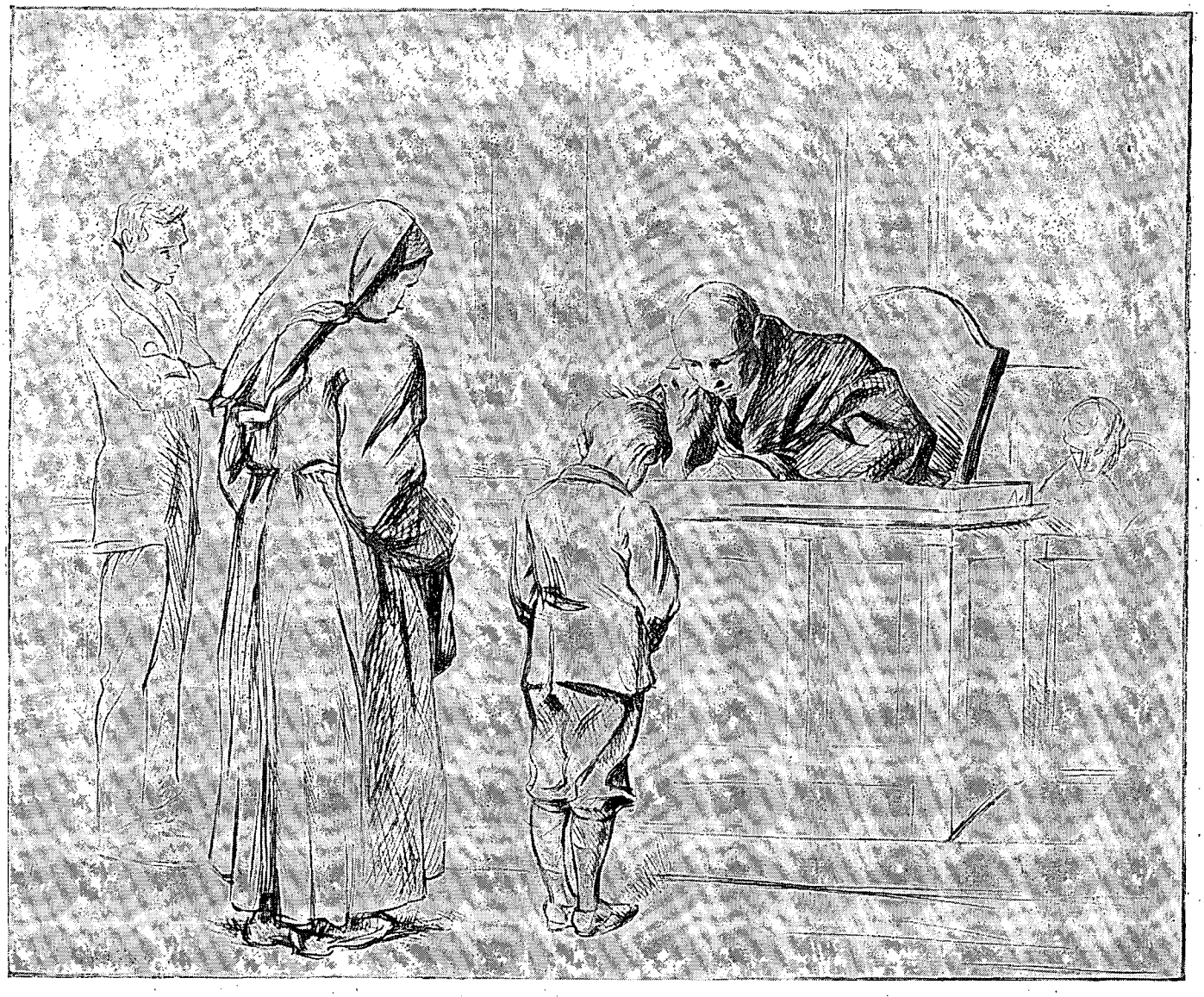

Courtesy Kleemann-Thorman Galleries, New York

THE TRUANT

Etching by Albert Sterner

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The Drift of the Social Sciences

By DONALD SLESINGER

NOT long ago in an educational discussion a distinguished biologist referred to the "real sciences" and the "other sciences" in the casual manner of one making a generally accepted statement of fact. Those of us representing the "other sciences" were a little surprised, but the discussion had ended before we were ready to voice our protest. As we walked along the Midway we wondered just what our protest would have been—how we could have justified our claim to the term science in the eyes of our tough-minded colleagues with their tangible nerve-muscle preparations and test tubes, with their laboratory-controlled conditions. We found ourselves a little on the defensive, a little inferior feeling, a little desirous of justifying our work on the same basis as that of our colleagues. We made an effort to become precise, objective, to define terms with the utmost exactness and to reduce theories to graphic and mathematical form. But the commendable effort did not quite seem to work. There was an element of surprise that made our predictions fall far short of perfection. Each of our social units seemed to be an aggregate, the nature of which we did not quite understand. The gland of some individual we had no interest in was always kicking up and influencing the behavior of a group we were interested in, in an unexpected way. We sat on a bench in Jackson Park, looked across the lake and speculated.

It required a bit of history to understand the social scientist's passion for science and at the same time his inadequacy as a scientist. Not so very long ago any reputable worker in the non-practical social field would have called himself a social philosopher rather than a social scientist. He would have painted a rational picture of society, and would have spent much time trying to understand intellectually both the origin of society and the direction in which it was traveling. His subject matter was largely the social philosophy that preceded him, which he attempted to evaluate critically, adding to it a constructive note or two before his labor also became part of the great subject matter of the field. Actual human experience of a day-to-day variety had only an incidental place in this philosophic fabric. Unconsciously the philosopher was influenced by the civilization in which he found himself; sometimes his theories were uncannily practical; but that was due more to keenness of intuition than saturation with data.

For what Sherwood Anderson would call some obscure reason, thought about society left the logical altitude of philosophy and came rapidly into the market-place, where social reformers, muckrakers and distinguished novelists had been laboring and accomplishing much in a practical way. They had built up a body of data accurate in spirit and useful in persuading the public that there were social ills that needed attention. Practical reforms in society and government followed their revelations and gave them a specious sense of certainty.

While few scientific claims were seriously urged (except for purposes of propaganda) by these social thinkers, their activities were upsetting to more rigorous minds and helped to bring them into popular disrepute. At the same time the way was paved for a more experiential attack on all the problems of society. The social disciplines were slowly struggling out of the armchair into the field. The fact that this intellectual change occurred when American universities were increasing both in number and size and required new personnel in large numbers may help to explain the next phase of what we can now call the social sciences.

With empiricism in the saddle, university faculties in the social sciences attracted great numbers of preachers, social workers, social reformers who were driven from more practical pursuits either through intellectual interest or temperamental inability to put themselves across in a world of people. The attitude of these new recruits was essentially wholesome; theorizing was repugnant to them; they wanted to get the facts and were willing to keep their noses pretty close to the ground in order to do so. They observed, took notes, compared. They tried to be objective, to rule out personal bias, to consider the experiences of others as well as their own. They collected industriously, everlastingly, what they called the facts clustering about the problems they were studying. They even wrote books.

THE collection of so-called facts proceeded at such a rapid pace that it became necessary to divide and subdivide the field in order to be able to think clearly and consecutively about the accumulated data. The study of man became economics, sociology, government, anthropology; economics became taxation and other things; taxation divided itself until it was possible to be an expert in, let us say, special assessments, with little knowledge of the whole field of economics and none of the other social sciences.

If there were many evils attendant upon specialization, some good came of it as well. When it was no longer necessary to cover an entire field it was possible to think all around a given portion of it. Careful attention to detail made the inadequacy of data apparent; the specialist knew the inaccuracy of his prediction, knew how far he was from anything remotely resembling social control. He began to feel that if he was going to get anywhere he would have to pay some attention to the methods by which he collected and manipulated his data; he would have to create techniques suitable to the subject matter under consideration.

We were ruminating, that evening by the lake, rather than developing a thesis and it seemed to us, in casting a sweeping eye over the universe under discussion, that the growth of technique had been circular or rather spiral, since the point to which it was returning was different from the point it started from. There was observation, increasingly refined, but never reaching a high degree of accuracy. Comparative observations acquired a certain verisimilitude which was due largely to the limitations of language and hence deceptive. Then there was the case method coming over partly from social work—partly from a scientific world that

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was putting an increasing emphasis on the individual. It was possible to say for physical science that "The great change which has come over physics in the last twenty or thirty years is due to the fact that instead of studying the behavior of vast crowds of atoms and molecules and endeavoring from the study to deduce the property of the individual, we concentrate more and more on the individual and try to deduce the probable behavior of the crowd." The case method in sociology was the analogue of that.

By itself this method was only partially satisfactory and led to insight rather than scientific truth. It needed checking, comparing, and because of the complexity of the individuals studied, needed that checking and comparing in innumerable cases. Statistical methods soon came to be widely applied; indeed to many they were the core of social science method. We get back to where we started, however, when statisticians become sophisticated and discover that their coefficients are of no greater value than the original observations. Gross inaccuracies are not to be ironed out by the multiplication of inaccurate observations. Observations must be further refined, must reach a point where they have the objective verifiability of the data of physical or biological science. This latest development in method is only beginning and a long time will elapse before it bears fruit. When it does, however, the drift toward science will be almost complete.

Almost, but not quite. There is still one more hurdle that the social scientist will have to meet before he becomes completely scientific. He will have to divorce himself from therapeutic criteria. Too often his researches have a therapeutic aim in view, an objective he wishes to achieve. The very term social problem means not an intellectual problem for a social scientist to solve, but an evil for a social reformer to overcome. The research is just an attempt to discover a method by which a condition can be ameliorated or wiped out. While this may be highly satisfactory for social progress, it comes pretty close to being fatal for social science. The investigator arranges conditions in order to bring about his objective, and when that is achieved, as it frequently is, he is satisfied that his experiment is complete and that he has uncovered a behavior sequence. And his joy in accomplishment obscures the fact that the result may have been obtained by factors of which he has no knowledge, just as a physician's cure may have little to do with his treatment. Social science shares with medical science the necessity of having to free itself of the desire to do good and of measuring its success by the amount of good accomplished. The medical sciences are only recently beginning to abandon the therapeutic aim in research. It is not to be wondered at, therefore, that the younger social scientists find themselves still slightly hampered by an attitude growing not out of this subject matter, but out of the personnel attracted to the field during a stage in the development of research when welfare was more important than truth.

WHILE the division of the social science field into more or less minute disciplines has been methodologically important, it has been a little unfortunate in the understanding of the problems social scientists had to face. As a result of that, in several centers cooperative research has been experimented with in the hope that it might supplement the minute work of individual investigators. The University of Chicago has been a pioneer in that field, and because it happened to be at hand the evening we were settling all the problems of social science in Jackson Park, we considered it in some detail. As far back as 1923 a group of social scientists at the University, stimulated by President Burton and Professor Small, undertook to focus their efforts on the processes of urban life. Taking the city as their laboratory, they planned a series of studies, none of which could be carried on within the limits of a single discipline, some of them requiring the combined aid of all of the social disciplines. Just as in elementary education attention has been shifting from the old subjects of the curriculum to projects requiring the combination of different types of knowledge, so here the emphasis shifted from research in economics, or political science or sociology, to studies of the city, the family, or personality. It may be instructive to see some of the mechanisms by which groups of research workers combine efforts to throw light upon a common problem.

THE personality laboratory at the University of Chicago grew out of the interests of members of several departments in aspects of human personality. They had been working individually from the sociological, from the psychoanalytical, from the physiological points of view without bringing their work to any focus and without attempting to secure comparable data in the several fields. They met at first simply as a conference group and after a year or so of discussion, formulated a comprehensive plan for the study of personality which included all the interests represented in the University. When the Social Science Research Building was built in 1929 a personality laboratory was set aside to be developed and exploited under the auspices of this committee. At present it is working with a variety of techniques, psychological tests, psychoanalytic interviews, physiological and bio-chemical studies of a small group. The same measurements are made on as many members of the group as will cooperate. The group at present is too small for statistical purposes, but it is hoped that at the end of a year or two of exploratory research, a series of hypotheses will be formulated which can be tested out on a statistical group. At present the personality committee is an all-star troupe, conferring, comparing notes on the same individual, developing and testing hypotheses, but not making any attempt to cast their material in final form. Perhaps for that very reason the committee is able to function on a democratic basis.

Another kind of cooperative research is typified by the study of the causes of war. Again, as in the personality field, it was necessary to employ a variety of techniques and to evaluate data from a number of different backgrounds. The group studying the causes of war met for a period just as the personality committee did, discussed their material and prepared a five-year plan of cooperative research. They employed anthropologists, psychologists, political scientists, historians and sociologists, covering war and the attitudes toward it from every conceivable angle. The research is now ending its fourth year and the problem of the integration of a vast amount of material has to be met by this committee. The separate researches have been under the direction of experts in the particular disciplines within which the research project fell.

The problem of extracting the meat out of these discrete enterprises is extraordinarily difficult and probably cannot be solved democratically. The committee therefore decided for next year to make the experiment of turning over all of the material to a single worker who will make his own synthesis and prepare a final report of the (*Continued on page* 80)

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The Clutch of Circumstance

By WILLIAM FIELDING OGBURN

Drawings by S. Liam Dunne

A WELL-KNOWN astrologer is reported to have received 70,000 letters in one week from the radio audience. This number is some four or five times as many letters as is received by a president of the United States upon election. The revival of an ancient and primitive practice among our supposedly enlightened twentieth-century populations through the agencies of such modern scientific inventions as the radio and the talking picture suggests interesting reflections. So far there has been no recrudescence of the art of foretelling events by looking into the entrails of chickens, but perhaps that is more suited to a rural culture with domesticated animals.

The return to such practices should not be taken as an evidence of the waning of the scientific attitude despite the taint of magic that has been associated with them in the past. The spirit of science is that of the search for new knowledge by methods of measuring relationship. Those who consult the horoscope are looking for new knowledge about their particular selves, and they are doing it by methods of predicting relationship which they think reliable. This being so, then their attitudes is all right, but their methodology is bad.

A significant aspect of the scientific attitude is the conception of determinism. For instance, when the statement is made that two blue-eyed parents can have only blue-eyed children, there are many persons without the true scientific attitude who develop just a little touch of rebelliousness; although they probably would not feel so at the statement that a hen cannot hatch a chicken out of a duck's egg. Determinism seems to limit the power of some miracle-making deity or divine force that ought to be able to give a little brown-eyed baby to parents with blue eyes.

A fundamental antagonism to the scientific attitude is mysticism, which thrives in the realm of the unknown. But as science adds new knowledge to our accumulating stock of information, it penetrates this region of the unknown, and pushes its boundaries further back. It would seem that we ought to welcome this conquering of the unknown with the glorious enlightenment it brings. We do like the enlightenment, but some of us do not like the determinism, because it cuts down the more or less unbounding nature of hope, of faith, of belief.

Science as a servant to humanity is an attractive idea, but science as a dictator to the human will is rather unwelcome. One who can topple over science, the dictator, usually gets applause. Such no doubt is one factor in explaining the remarkable popularity among the demos of Einstein whom only twelve persons, it is said, can understand. For did he not take a fall out of Newton, the very symbol of scientific determinism? Now we are accustomed to speak of the fads and fashions of science and think of the religious rock of ages.

Does science make puppets of us all?

While science cuts down the so-called freedom of the will, there are compensatory advantages in the form of more effective tools for power and service. In the old South there used to be a class of white people called "po' white trash" by the Negroes because of their thriftlessness and lack of enterprise. These dwellers in the slums of the villages were dealt with by moral procedures and their failure was thought to be a moral failure, a lack of will. While they served as very good illustrations for the pulpit and the Sunday school, it is doubtful if exhortation ever did much good. Science discovered, however, that these unfortunates had long, white worms hooked into the interior walls of their intestines, which were sucking away their energy. A dose of thymol was found to be more effective than an appeal to the will. Narrowing the range of the freedom of the will, in this case by scientific discovery, brought a tool of control and was a gain to humanity.

THE advance of science in the material world has been wonderful. Astrology became astronomy. Alchemy became chemistry. And now science looks at people. Will politics become political science?

Determinism in human affairs is the result of two forces, that of heredity and that of culture, for the forces of climate are little variable from decade to decade. It seems to be a never-ending discussion as to how much of our personality, of our behavior, is due to heredity and how much to environment. Here are two monozygotic twins who are operated on for appendicitis on the same day, and the victory of heredity seems complete. But here is a sociologist who shows us a local area within a great city where there is always such and such a percentage of juvenile delinquents, no matter what race happens to be living within this area; and that when these races move out into other and better areas the percentage of delinquency is greatly lowered or drops to zero, depending on the locality into which they move. And the victory of culture seems complete.

A score of years ago our institutions, our wars, our labor troubles were seen as the result of instincts, inherited instincts. Now we wonder whether there are any human instincts, and if so we wonder what they are; and our institutions, our wars and our labor troubles are seen as the particular conditioning of our reflexes, that is to say habit, the learning process, institutions or culture.

And no doubt the point of demarcation between heredity and culture will be pushed back and forth like a football through the centuries to come unless more new discoveries pose an entirely different set-up. For the moment it appears that much of the truly hereditary disposition of man within limits is rather modifiable. So that while he-

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In control on a sea of circumstance

redity is a tremendously powerful determining force, astoundingly so, yet within certain limits culture is all powerful. For instance, heredity plays no role in determining the language we speak. That last sentence will probably start the argument all over again whereas the purpose was to omit from the present paper a discussion of heredity without passing judgment and to proceed at once to direct attention to culture.

Science has not pushed back the boundaries of the unknown very far in culture as yet. So that there are still a good many pseudo-magical practices going on. And where other events occur of which we do not know the causes, we speak of fate, of luck, of chance. There is thus a lot of gambling on life. We feel that what we are and what we do depends upon circumstance. We are in the clutch of circumstance.

The unknown does not always mean mysticism. When a coin is tossed and heads come up, we do not necessarily see anything mystical about such an event; although gamblers as a rule believe in luck with a touch of mystery about it. When heads come up on the toss of a coin, we do not know the particular combination of causes that produces the event, but we assume that there are causes that could be measured if we possessed the proper technique. These causes may be in the balance of the coin, the molecular activity of the metal, air currents, the angle at which it went into the air, or others. The causes are many, minute, and for the present unmeasurable. Under such circumstance we speak of the causes as being chance, deterministic nevertheless. So life is filled with chance, with circumstance.

Science looks at people and all too frequently sees them in the clutch of circumstance, because it sees too dimly. Until science makes more progress in the study of society, life will be, too, much like the flip of a coin. Sometimes heads will come up, and sometimes it will not come up.

The forces of culture that shape our destiny may be classified into two great groups. The first are those that mold us when we are young and make us what we are. The second are the events of life that play upon us after our characters are formed and make or mar our fortunes.

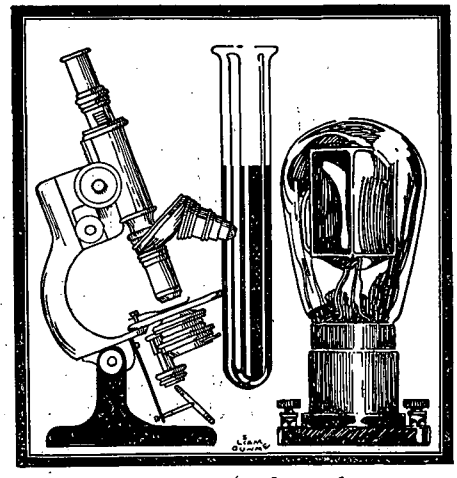
The first group we feel are very important in molding our personality; but this is a supposition. We really know very little about it. The hypothesis, however, is that much that was formerly called heredity is probably attributable to early environmental influences. An American child transplanted at birth into France, grows up a Frenchman. If transplanted into Iceland, he becomes an Icelander. Whether a child may be a poet or a scientist, an adventurer or a deacon depends upon the events of the first weeks of his life. Even if this theory is true, we may still be skeptical as to whether a culturist or behaviorist can turn the trick of making any baby into an artist, any more than a gambler can make a coin come heads up. And then the theory may not be wholly true. Perhaps hereditary constitutional factors help to make us introverts or extraverts as truly as the environment of infancy. But we are sure that the early environment of infancy helps to make the constitution. If the water and the products of the soil are lacking in iodine all the compensatory mechanisms of the child's body can hardly make up for this lack. If the thyroid is thus susceptible to environment, may not also be the pituitary, so effective in growth and sex, and the adrenals, so significant for energy and courage, and the others be similarly affected?

Science is beginning to tell us about the glands of internal secretion. So also within the past score of years it has discovered the vitamins, or rather is discovering them. And so we give our babies a synthetic vitamin D, called viosterol, and tomato juice is added along with spinach to the child's diet.

AND within the same period science has discovered the "only child." He may be a genius or he may be a neurotic but he is not so likely to be ordinary. Science has not yet told us clearly how we can tell whether his name will be in Who's Who or on the register of a hospital; but then we have only just learned that there are such things as only children.

Then there are oldest children and youngest children. If the oldest children are more radical, or more jealous, or more responsible, and if the youngest children have more inferiority complexes, are these not the products of early cultural influences?

Furthermore, psychiatrists are telling us that whether a person can develop a neurosis or not is determined by the time he is five years old. It may be that emotional life is over-stimulated and too particularistically conditioned by over-fond parents or playmates in this age of childless marriages. And does the reading of fiction and imaginative literature fostered so much by our schools and libraries for children make difficult for them the appreciation of the dividing line between reality and unreality? If these assumptions are true, it is high time we were learning something more about them, since about one in twenty of our highschool boys and girls in New York State will be in an insane asylum some time before they die.



Science conquers the unknown

Then there are the child clinics developed since the War, with their measuring instruments and their scientific technique, that are telling us much about how characters are made. Here is a child that is thrown with smaller or weaker or younger children. He is more successful in taking away from the others the candy or toy that he wants. The recording instruments of these trained observers show in statistical form how many times per hour and per day this act of aggrandizement is repeated. And with a little multipli-

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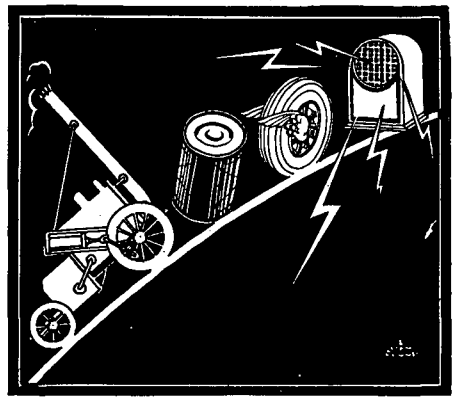
cation we can estimate the repetition within a year. With perhaps tens of thousands of repetitions within the early years, is it any wonder that an aggressive disposition is formed?

It may appear to us now as accident or circumstance that we are shy or aggressive, imaginative or matter-of-fact, hot-tempered or docile, but with the development of science in the field of child study within the past quarter of a century or even within the past decade, who shall say that it will always be a matter of chance like the roll of the dice? Almost surely science will have told us within the next twenty-five years or even within the next ten years what are some of these more important influences that mold modifiable infants into this or that personality, and the measure and degree with which they operate.

The determinism of science in this field ought not to be feared, for the possibilities of control and power are enormous. But to parents who are drifting on the sea of circumstance, it will bring a responsibility that is somewhat awesome to contemplate.



The upward curve of inventions

The second group of cultural influences that science is trying to fathom are those that we live in as adults. As we near the close of our physical growth, our character and personality become less and less subject to change. They never cease to undergo some change; but as we approach adulthood the changes are of less and less significance. We may undergo so great a change as being cured of a neurosis, but even psychoanalysis changes our personality little.

As adults with characters formed we live in a world where the events of life are of great significance for our welfare if not for our personality. We may go bankrupt or we may make a fortune. We may go to war or cultivate our vineyard. We may choose an occupation that is favorable to our temperament or one that is hard and forbidding. The future holds uncertainties for us. We may travel and see the world; we may end in the gutter.

IS science conquering this realm of the unknown? Is fate being brought under control? Here again it must be admitted that there is much uncertainty about social change. Who can say when the next great war will occur? And when it does occur, who can say what governments and industrial systems may be revolutionized and what social events will follow in its wake?

We have only to look at what is happening to our religious life and to the codes of ethical behavior to feel again how uncertain is our knowledge in this realm of the more or less unknown. Will the church administer only to our personal spiritual needs or will it guide us as a leader in social movements? There are many prophets to tell us what the church is going to do and what the religion of the future will be, but their prophecies are conflicting, and who is to tell us which is right? Similarly, other fields of activity, our conduct in business practices, in sexual behavior, in disrespect for the law seem chaotic and confused. At least there is not that clear precision that we expect to come from the guidance of science. It is a real question as to how much effective guidance we, with a given personality, can expect in the changing economic and social events of life. For the moment again chance seems to be the arbiter in much of life. Yet the record of the past few decades is not one wholly of discouragement.

For one thing, the hazard of many childhood diseases and of the contagious diseases in general have pretty well been eliminated. We can almost count on not dying from smallpox, even if we have no such assurance as regards cancer. But then cancer is fortunately largely an affliction of age. Famine, a scourge of the Middle Ages, is no longer feared in the Occident, thanks to the growth of transportation systems. As to economic welfare, hard times can be expected about every three years unless we learn some means of controlling the business cycle. But a quarter of a century ago we did not even know there was such a thing as the business cycle. We knew there were panics and of course that frequently there were hard times. But the regularity about it that there now appears to be was unknown. It is true business cycles are not regular like the tides, and they vary in intensity. There is every reason to believe that this is not our last period of unemployment, but that in perhaps from two to four years from now we shall have to have large public relief for those of the wage-earners who are laid off from work. And that, at that time, not only will the employes suffer but there will also be businesses going into bankruptcy and banks failing. We know something about the business cycle but not enough of the exact reliable knowledge that we have come to expect from science.

However, the knowledge of how the economic system works is accumulating. This is evidenced by the success met within the past decade in eliminating waste. We could hardly have so succeeded without measurement recorded in statistics.

A good deal has been learned about money and credit since the years preceding the War. If credit and money increase faster than production there is an impetus to good times. In many European countries this lever was actually used as an instrument of control. It got out of hand in Germany, was employed perhaps badly in England, but worked rather well in France. In the United States it appears that our production increases about four per cent a year, but apparently we do not yet know enough to regulate the credit supply accordingly. Perhaps if we did we might even expect to eliminate the business cycle. This is an age in which we talk of planning and control. This very atmosphere of control and planning is evidence of the confidence with which science is attacking the unknown in social and economic life.

Much is known about population also. The chances of death are figured out mathematically for each age, for both sexes, for different localities, and something is known of these chances by occupational classes. We know that our deathrate cannot go much lower and that it will certainly become greater in the next few years to come, despite the fact that the onward march of medical progress will continue. The deathrate will rise because of changes in the ages of the population. There will be larger and larger propor-

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tions of old people, which is a fact itself not without social consequences. It may increase the conservatism of the country as a whole, but it will surely raise the problem of how to care for these older people, who will live mostly in cities where there is little space and whose few children will be scattered to the places where they are likely to find the most jobs and the best.

This same changing age distribution of the population means that the birthrate will fall even more than would be expected by the diffusion of contraceptive techniques alone. Indeed, even now with a stabilized age distribution, one hundred girl babies will be replaced by only about one hundred other girl babies—not more. These trends of births and deaths enable one to see that the rate of increase of population will be lessening. In fact, three of four population experts count upon a stable population of about 175,000,000 in the United States in, say, the last quarter of the present century.

AND so there are other illustrations of how reliable knowledge is being discovered about the social system by patient research workers. But in conclusion it is desirable to mention one other very significant factor which brings a certain amount of light to the study of social problems, but also shows very clearly some of the uncertainties that beset us. This is the increasingly powerful factor of mechanical inventions.

The course of the whole of civilization is affected by technological progress which is in turn dependent upon invention and scientific discovery. Fortunately science has something to tell us about the history of material culture. It began in the old stone ages with a few flaked tools. After long stretches of time a new improvement or a new invention leading to a new tool would be made—and (this is the important point) it would not be lost but would be added to the existing stock. Sometimes there was a replacement. Stone tools are no longer used, for instance. But in general there was an accumulation.

With more tools and more technological knowledge, more inventions were possible and they were made more frequently. So today we have huge accumulation of material culture and knowledge pertaining thereto. There seems to be a functional relationship between the existing amount of technical knowledge and tools on the one hand and the number and frequency of inventions on the other, a relationship not unlike that between principal and interest in compound interest. We invent more because we have more with which to invent.

It appears, therefore, that there will be an increasing technological development. This makes, it would seem, the prospects of a destruction of civilization very remote indeed. (For an explanation of those who see a collapse of civilization, the psychiatrist, it is suspected, is needed rather than the economist or sociologist.) The curve of increasing inventions has been fairly steadily upward since the beginning it is thought, even through the fall of Rome, the decline of Greece and through the Dark Ages, with perhaps some undulation for the world as a whole, of course. The decline of art and philosophy, the disorganization of a particular government, or the change in codes of moral conduct, however upsetting to those who experience them, are not, of course, the destruction of civilization.

More and more inventions seem to be the proper deduction from the analysis of the past. These ought to mean a higher material welfare as long as our natural resources hold out, which in general they probably will for the next few hundred years, and provided Malthus' dire predictions about population do not come true, and they probably will not as we are approaching a stationary population of a rather small number in the United States.

This increasing knowledge of material culture also opens up new realms of the unknown upon which science as yet throws little light. These are, first, the social consequences which these inventions occasion and, second, what new inventions may be expected.

THE social effects of inventions are in reality the problems of adjusting man to his environment, an environment which is too often thought of in terms of climate and geography but which is really one of a huge rapidly changing material culture. The adjustment to some of these inventions occasions little difficulty, as for instance the safety razor; but to others, as for instance the tin can, the consequences are far reaching and profound. What a time man has had trying to adjust himself to steam! How shall society, and religion, and ethics, and education make its adjustment to the contraceptive? It seems very difficult to foresee the consequences of these inventions. Very few of the hundreds and thousands of the effects of the radio, of the automobile, of liquid air, of the x-ray were foreseen. Industry, home, the family, cities, rural life, religion, education are all being affected. If science would reduce the role of circumstance in life, it must show us the consequences of the new inventions that are influencing many aspects of our culture so rapidly and so frequently.

And of course it should tell us what the new inventions are to be. But this seems not a very realistic expectation to entertain. Shall we send mail to Europe by rockets? Shall we utilize the sun's rays directly for making power? Will facsimile radio production do away with the postal service? Shall we print our newspapers by radio? Will the telharmonium supplant the orchestra? Will wood be the source of supply for our breakfast food? Will televox, the mechanical man, become our servant? Can we keep ourselves warm by short-length radio waves and thus discard clothing and eliminate heating of our houses in winter?

These questions all concern inventions that are realities today, that is, inventions that have been demonstrated in one form or another. The unknown inventions of the future are beyond imagination, not to mention prediction.

THE record of science as it deals with the social life of peoples has been truly remarkable as one looks back over the past quarter of a century. It has pushed back the bounds of the unknown and eliminated some of the hazard of life. And at the same time it has shown us limits to our hopes and dreams beyond which we may not expect to go. Science has helped to show us what we do not know and as one contemplates the things not yet known, the events we cannot predict, it is quite clear that we shall be victims of circumstance for some time to come. Yet it is fascinating to speculate on just how much science may discover for us within the next quarter of a century. It will probably be startling in quality and in quantity.

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A Self-Controlled Population

By HENRY PRATT FAIRCHILD

Drawings by Catharine Lewis

OF all social problems the latest to receive scientific, or even semi-scientific, attention are the two that are of the most fundamentally vital importance. These are the quality and quantity of the people who compose the society itself.

Quality, from the very earliest days of man's reflective consideration of himself, has simply been taken for granted. It seems to be inherent in the very character of peoples that they should consider themselves, each one respectively, as the finest examples of the human race to be found anywhere. At one extreme is the common example of the primitive tribe whose name for itself is identical with the word for "men." A visiting stranger inquiring the name of the tribe is told, "We are The Men." The implication is that all other tribes are something less than men. At the other extreme is the modern super-patriot, typified in this country by the one-hundred-per-cent American. This attitude underlies a large part of international relations and is one of the most potent causes of international friction.

As regards differences in quality among the members of the same people or group, these have been largely unperceived or ignored. At least there has not been any notion that anything could be done about them. I am speaking now of what, in ordinary phraseology, are called innate or inborn qualities. They are really "in-conceived" qualities. They are the traits that are determined by the germ plasm contributed by the two parents to the original embryonic cell. It is to these traits exclusively that I propose to confine myself in the following pages.

Primitive man of course knew nothing about heredity or genetics—in fact, it was a long time before he knew anything about propagation in any of its primary aspects. Consequently the notion of any possibility of control of these features of himself and his fellows never occurred to him. Whatever he did in the way of modifying or improving his external or internal make-up was achieved either by the application of environmental influences in those ways which are the essence of education, or else by the crudely mechanical methods of tattooing, scarring, knocking out teeth and in other ways producing effects that were distinctly characteristic of the tribe. These methods, we now believe, could have no effect on those basic traits to which I have referred, at least as far as the next generation is concerned. Such methods have to be repeated with each succeeding generation and at best are effective only within narrow limits.

It remained for Sir Francis Galton to develop in any comprehensive way the idea that social procedures could be inaugurated which would result in a cumulative improvement of the basic characteristics within which education is restricted and upon which alone it can work. The method was to be an arrangement of matings in such ways as would tend to increase the number of offspring of parents whose innate traits were socially desirable, and to diminish the number of the opposite type, and perhaps in addition to promote certain specially favorable combinations of traits which would result in types superior to any previously known.

NOT that Galton's proposals, put forward through the latter decades of the nineteenth century, were by any means the first conception of such a notion. For centuries past an occasional penetrating intellect had perceived the possibility of applying to human beings some of the breeding principles that had become familiar in the handling of domestic animals. Thus Campanella, nearly three hundred years earlier, in his description of his fanciful City of the Sun, had observed that one of the rulers of the city was Love, and then remarked, "Love is foremost in attending to the charge of the race. He sees that men and women are so joined together that they bring forth the best offspring. Indeed, they laugh at us who exhibit a studious care for our breed of horses and dogs, but neglect the breeding of human beings."

This lineal descent of eugenics, the science of human breeding, from the experience, principles and practical technique of animal breeding was inevitable, but it has involved some serious and in many respects unfortunate consequences. It took the science of biology generations of herculean effort, first to demonstrate that the human body was in all essentials similar to those of lower animals, and then to win popular approval of the handling of human bodies, for certain purposes, just as prosaically and objectively as other animal bodies. Furthermore, the difficulty or impossibility of full experimentation on human bodies made it necessary to make the widest practical application of these similarities, and to assume that any biological principles well established by experience with lower animals could be carried over into the human realm with practically no change.

"If only," laments the pathetic little creature, "my ancestors had been consulted"

The effect of this situation upon eugenics has been twofold. In the first place, it has brought it about that eugenics up to date has been profoundly affected in its development by the biological attitude and heavily overloaded with biological implications and procedures.

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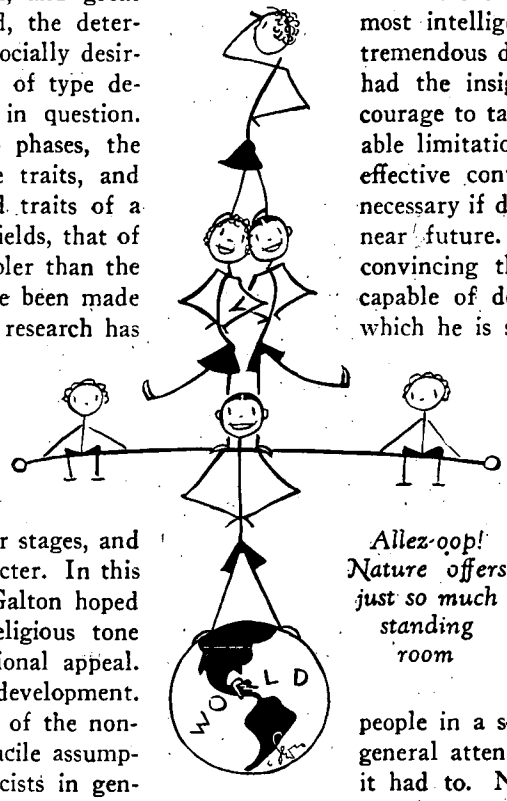
Granted without reservation that these biological foundations were absolutely necessary and that the work of the distinctly biological eugenicists has been indispensable and merits the highest recognition and praise. Yet the fact remains that eugenics is essentially a sociological enterprise, and that it can not even begin to approach its true objectives until it is dominated by genuinely sociological concepts and equipped with a genuinely sociological technique.

The task of eugenics may be divided into three stages. First, the determination of what traits are really germinal or hereditary and of the rules that govern their transmission. This is the distinctly biological aspect, and great progress has been made in it. Second, the determination of which of these traits are socially desirable, that is, consistent with a pattern of type development established by the society in question. This, in turn, divides itself into two phases, the determination of definitely undesirable traits, and the endorsement of generally admitted traits of a desirable order. The former of these fields, that of negative eugenics, is immeasurably simpler than the latter, and some real achievements have been made in it. In the field of positive eugenics research has scarcely even been visualized, not to say started, and it would be difficult to put one's finger on any notable accomplishments. The third task is the devising of practical procedures to bring about matings of the sort indicated by the researches in the earlier stages, and to prevent matings of an opposite character. In this field, too, very little has been done. Galton hoped that eugenics might acquire a semi-religious tone and accomplish its results by an emotional appeal. But there is little evidence of any such development.



Allez-oop! Nature offers just so much standing room

The second unfortunate consequence of the non-human antecedents of eugenics is the facile assumption, much too characteristic of eugenicists in general, that it is possible with relative ease to do in human breeding essentially the same things that the stock-raiser does with his materials. Illustrations of this attitude abound in the literature of the subject. The fallacy is due to the ignoring of the sociological features of the enterprise. First of all, there is the difficulty in adopting in the social field what the stock-raiser knows as his "breeding program." The animal breeder has a definite picture of what he is aiming at. Society, as we have seen, has not, and it will always remain a matter of extreme difficulty to get agreement on any such an idealized type. The animal breeder very frequently aims at the intensification of certain "points" with relatively little concern as to incidental modifications that may develop in other features. It is probable that society will always need to keep in mind the well-rounded individual. Furthermore, the animal breeder has complete control over his subjects and does not need to consult them as to the pattern into which they are being molded. There might never have been such an animal as the dachshund if it had been necessary to consult the ancestors of that pathetic little creature. It is fairly safe to predict that mankind will always insist on being consulted.

Most serious of all is the fact that the breeder of animals can be as arbitrary as he chooses in arranging his matings. He can mate brothers and sisters, he can foster polygamy to any extent, and to cap the climax he can kill off or exile from his breeding pens any individuals who do not give promise of producing the kind of offspring he desires. "You can't do that way when you're breeding men." Here is undoubtedly one of the greatest obstacles to the practical accomplishment of the eugenic ideal, and the way around, or over, or through it is by no means clear. How matings are to be made really eugenic while at the same time all reasonably normal individuals are allowed to mate is a truly baffling problem which, once again, calls for research that has hardly as yet been even visualized.

Thus the control of its own quality by even the most intelligent and civilized society is a task of tremendous difficulty. All praise to those who have had the insight to envisage the problem and the courage to tackle it, howsoever great their unavoidable limitations! For it is quite certain that some effective control of this sort will be increasingly necessary if disaster is to be avoided in the relatively near future. The evidence becomes yearly more convincing that the average man of today is incapable of dealing with the social situations with which he is surrounded, and that even the leaders fall far short of the capacities required of them. Raymond B. Fosdick's phrase, "The Old Savage in the New Civilization," is a peculiarly vivid summary of the situation. Society must somehow or other find out how to breed a man competent to deal with the products of his own social evolution. Eugenics today is about ten per cent accomplishment and ninety per cent challenge.

The question of the quantity of people in a society received much earlier and more general attention than that of quality, just because it had to. Nature, in spite of all that we know about the struggle for existence, is very tolerant and lenient in the matter of quality. "Fitness" means only fitness to survive. But in the matter of quantity she is absolutely rigid.

Here again, familiarity with the strictly biological aspects of the problem is an indispensable preparation for an adequate comprehension of the sociological or human aspects. One great uniform law runs throughout the whole of organic creation. Every species of living creature is equipped with a reproductive capacity sufficient to provide for its increase at a geometrical ratio with incredible rapidity. Illustrations of this principle are abundant and familiar, one of the classic instances being that of the oyster. If a pair of oysters should start breeding at the average American rate, and their descendants should continue it, the great-great-grandchildren of the original pair would form a mass eight times the size of the earth. Some species have a much higher capacity than this, some much lower. But there is no living species that could not cover the earth in a few generations if there were nothing to stop it.

On the other hand, the provision necessary for the maintenance of these creatures is strictly limited and incapable of increase. Nature offers just so much standing room and food and no more. The consequence is that the great law of Nature in this field is the law of stationary population. Every type of organism arrives at a maximum population beyond

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which it cannot increase over any extended period of time. The balance is maintained by a deathrate always equalling the birthrate and usually expressing itself in an infant mortality that falls short of one hundred per cent by an infinitesimal fraction. As we ascend the scale of organic evolution birthrates, deathrates, and infant mortality rates all steadily decline, but the law of fixity of numbers still holds good.

Man, with his distinctive mastery over the forces of nature, has been able to modify the operation of this law, but not to repeal the law itself. He has been able to increase his numbers gradually for a million years, and rather strikingly in the last few centuries. But he has never been able to maintain a population even approaching that which would have resulted if his native fecundity had been able to realize itself fully. Man has had to submit to the control of population just as truly as the lower animals.

This control by nature has expressed itself, as always, in the form of deaths of those already born. Death in this rôle takes many guises—pestilence, starvation, and exhaustion that causes relatively mild sicknesses to end fatally. But man learned very early to be dissatisfied with nature's methods and to forestall or supplement them with devices of his own. His favorite expedients have been war and infanticide. But as his intelligence progressed he began to see the desirability of exercising control before birth, and developed various crude methods of abortion and even of preventing conception by castration, infibulation, and so on.

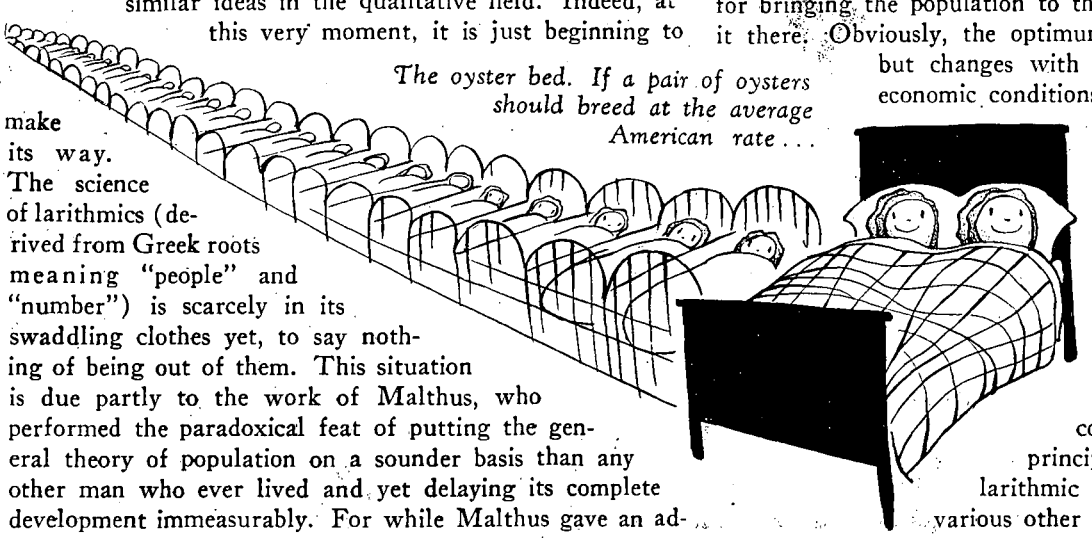
SO for hundreds of thousands of years the control that nature insisted upon was accomplished by a combination of natural methods and elementary human methods. During this period many, perhaps most, societies developed the rudiments of a population policy, or at least of practices that bore the external features of a population policy. Sometimes these policies were strangely inconsistent, or the practices were inconsistent with the policy. This was due partly to a clash between the social needs of a large population to provide military strength and national prestige, and the individual and personal requirements for comfort and prosperity which demanded a limited size of family. This antithesis persists to the present day.

But the recognition of the necessity and possibility of dealing with the quantitative aspects of population objectively and deliberately, even scientifically, developed later even than similar ideas in the qualitative field. Indeed, at this very moment, it is just beginning to make its way. The science of larithmics (derived from Greek roots meaning "people" and "number") is scarcely in its swaddling clothes yet, to say nothing of being out of them. This situation is due partly to the work of Malthus, who performed the paradoxical feat of putting the general theory of population on a sounder basis than any other man who ever lived and yet delaying its complete development immeasurably. For while Malthus gave an admirable analysis and interpretation of the principles that determine what the size of a population *is*, he is almost completely silent as to what it *might* be or *ought* to be. This is due to his fatalistic attitude toward the whole subject. He regarded the principle of population as a powerful, malevolent force brooding over mankind at all times and offering man only the gloomy alternative of greater or lesser misery. The notion that an intelligent society could grasp the question of its numbers and manipulate it deliberately in conformity with a rationally determined program probably never entered his mind.

Primitive man improves himself with tattooing—but primitive baby does not inherit the decoration

But that notion is now making headway by leaps and bounds, due largely to the introduction of the expedient of birth control, and all the modifications in taboos, moral notions and social sanctions that accompany it. Societies now realize that it is possible to control the size of their populations intelligently.

There still remains the task of determining the larithmic ideal, that is, the size of population that is right for any given society at a given time. This is easier, on the whole, than the corresponding task in eugenics. For there are a number of accepted human values that are so obviously affected by the size of population that it is a simple matter to get people at least to see that a change in numbers affects them favorable or unfavorably. This is indicated by our ready use of the terms "underpopulation" and "overpopulation." One of the central features of larithmic theory is that if there are such states as are indicated by those terms there must be an intermediate state which may be described as "optimum population." It is the business of larithmics in its practical applications to discover what size of population corresponds to that state, what is the "optimum" for any given society at any given time, and to devise measures for bringing the population to the desired size and keeping it there. Obviously, the optimum is not a fixed quantity, but changes with the developing social and economic conditions of the society.



The oyster bed. If a pair of oysters should breed at the average American rate . . .

One of the simplest criteria that larithmics can use for this purpose is the material standard of living. This is something that practically everybody values, and the relation between it and density of population is almost self-evident. For some time to come it will probably be the principal objective aimed at in larithmic programs. But there are various other

(*Continued on page* 64)

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Here's to the Future!

May it—

travel far

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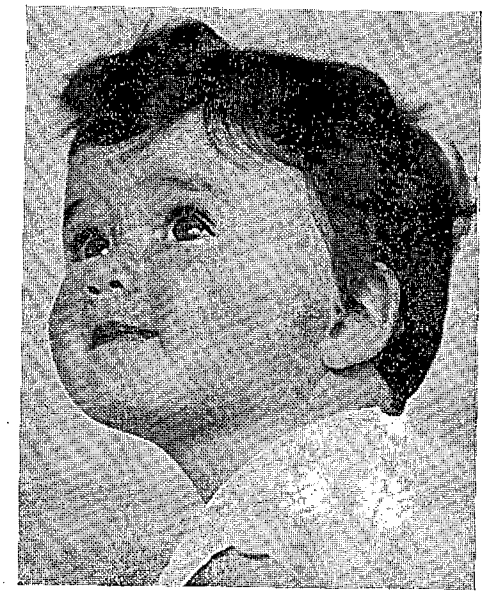
learn much

These delightful photographs are by Hedda Walther, the one to the right from the book by Paul Eipper, Human Children, published by the Viking Press, New York, the others from Mutter und Kind, a volume of camera studies, Dietrich Reimer Verlag, Berlin



look ahead

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Courtesy Frank K. M. Rehn Galleries, New York

FOLLY COVE — PAINTING BY LEON KROLL

Well-Born Children

By ROSWELL H. JOHNSON

WE can increase the proportion of inherently superior children in a people or a country only by increasing the percentage of parents who are similarly superior. Such an end may be obtained by increasing their length of life so that they will survive to and through the reproductive years; by increasing the marriage rate and reducing the age at marriage of people who are superior potential parents, as well as improving the quality of their mates; and by increasing the number of children of such parents once they are married: in other words, by improving the deathrate, the marriagerate and the birthrate of people who have superior qualifications for parenthood.

AS measures which will promote the first of these—the survival of the fittest parents—the following are proposed:

Promotion of law and order in order that the bandit and the pirate and the unscrupulous may not be more favored in survival than those who are more efficient in the worthwhile work of the world. This need is most conspicuous in China.

Reduction of the frequency and extent of war because the side with the heavier losses often is not the inferior side as to the quality of the losses. The side with the lesser losses is often the group which is more predatory and hence the one which is more concerned with military efficiency.

Selection within the nation, if war must come, to safeguard the members who are most valuable eugenically. At present inferiors are rejected from the draft or put into labor battalions which are relatively safe. On the other hand, for the very dangerous aviation service, superior candidates are selected or accepted. In war for extra-hazardous details or services, individuals should be chosen who possess only the necessary emotional and will traits, not qualities less needed in such service but more valuable in other ways, such as those of the inventor or research man. The army should look for aviators among professional athletic teams rather than in Phi Beta Kappa. Indeed it should reject any Phi Beta Kappa applicants for such service.

Avoidance of extreme severity in the sentence of political prisoners as in Russia, where the treatment of such prisoners contrasts with the short term and the leaves of absence of ordinary criminals. Whether the governing group is revolutionary or counter-revolutionary, political offenders possess many more desirable traits on the average than ordinary criminals.

Promotion of hygiene, as it is the more readily accepted and practiced by the more intelligent and those with better control of behavior and hence enhances their chances of survival more effectually than those of the class that rejects it.

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AMONG the measures which would promote desirable marriages, we may include the following:

Preferential selection. By preferential selection is meant influence on the choice of a mate by the degree in which he or she possesses some desirable trait. The traits to be given most weight should be those that are most valuable. The effectiveness of the selection is increased by actual non-mating of the person in whom the important trait is absent or slightly developed, rather than a mere delay in marriage. On the other hand preference should not be so intense as to defeat preferential selection by leading the selector to reject mating altogether if he can not find what he considers the best. In simple words the slogan is not "marry the very best or not at all," but rather, "marry as well as can be; if the best is not attainable, take the better."

Removal of artificial barriers which accomplish no good purpose and restrict the freedom and range of choice. Instances are such minor barriers as language, class, politics, religion and closely related racial stock. After such barriers are removed, the persons who remain unselected are the residual individuals from the entire population and not, as sometimes happens when the barriers are in force, the individuals on a higher level who must remain single solely because of these barriers.

Aid to earlier mating of the superior by a more discriminate distribution of scholarship and other aids in a more systematic search for promising ability in which the mental tests are especially useful. In this connection the significant and valuable studies under the leadership of Professor Lewis Terman in his Studies in the Genesis of Genius well deserve wider appreciation. Such aids should be gifts, not loans, as the latter unduly postpone marriage and child-bearing.

Restrictions on marriage would seem at first thought to be wholly in the field of negative eugenics, but in a few respects they deserve mention here. Thus if certification as to freedom from venereal infection were required, some highly desirable consorts would be saved from sterility resulting from infection by the diseased mate.

A required waiting period and publicity for the marriage license would save the mating of some superior individuals with a very undesirable mate. In Los Angeles one thousand marriage licenses a year are not used because of such a law. Finally a liberalization of the restriction on the basis of consanguinity is desirable. Many of our states restrict the marriage of first cousins and of persons who are totally unrelated by descent, but connected solely through the marriage of relatives. No such relationship-in-law should ever bar marriage. Americans have not infrequently criticized the English in this matter, but in several of our American states one may not marry a step-daughter or daughter-in-law and the like. The common interdiction of the marriage of first cousins deters the production of many valuable offspring. A marriage of first cousins who have one or two very illustrious grandparents in common is actually to be favored as increasing the probability that any valuable gene there present may reach expression and also that some valuable combination of genes may be kept together. Of course, it is assumed that there would be care lest any serious negative trait be brought out. The extraordinary success of the parenthood of Charles Darwin and his wife, who was his cousin, has not made the impression which it should. In this instance there were grandparents in common of high attainment.

Proper provision for divorce is a useful means for positive eugenics in that a marriage may be dissolved in instances in which, with fuller knowledge, it would not have taken place originally. The percentage of superior children born would unquestionably be higher if divorce could be had for desertion, sterility, feeblemindedness and insanity.

From the viewpoint of eugenics an ideal arrangement of divorce would be to have no set specified grounds but to require a conference with an expert in this field who would ascertain and weigh the facts to determine whether or not an attempt at reconciliation should be made. When attempts at reconciliation failed or were inadvisable, the divorce should be granted. Sexual selection can never operate in its full effectiveness where revision is impossible. A manuscript in indelible ink misses some of the possibilities of improvement that one in pencil has. The frequent abstention from divorce for the expected advantage to the children only is often a mistake where the home is in discord. The setting provided by a wrecked or quarrelsome marriage is a dubious advantage.

The promotion of assortative mating—the marriage of like with like—is a recommended procedure which is less widely acceptable. The effect here is to produce more or less specialized individuals and thus increase the heterogeneity of the species. Such a policy is considered objectionable by some people, but it has the very great advantage of giving us far greater inventors, statesmen and artists than can otherwise be produced; and since culture advances so largely through the contributions of such innovators, this specialization in an innate capacity seems desirable as it is universally admitted to be desirable in education. Co-education, attendance at leading centers for the specialty in question and clubs for special purposes in which both sexes are included are useful devices to this end.

Our immigration policy has nearly always been shaped with reference to negative aspects of eugenics, but should we not give attention to its positive possibilities? The best immigration law would be one under which only persons better than the median of the receiving country are permitted to enter. Such a law, of course, increases the quality of the receiving nation; and since such nations are on the whole less crowded than emigrant countries, there is the larger chance that an individual may in the long run leave more progeny. But even this does not seem enough. A nation would do well to seek valuable recruits from abroad by offering prizes to the immigrants of very high test scores. On the contrary, the United States pursues the amazing policy of permitting students to come to this country from abroad, finding out their quality by their standing in our universities, and then insisting that they leave the country no matter how excellent they are. The wisest course for us to pursue would be to permit all students graduating from our universities in the upper half of their classes to remain in our country should they so elect. If this is considered too liberal, what could possibly be said against permitting at least honor students to remain? The writer has had in his classes the brilliant son of a former premier who begged to be permitted to remain in this country but was forced out. Can one imagine such a stupid course in a corporation?

UNDER the heading of increasing the birthrate of the persons whose children are likely to be valuable to the future, there are several measures which may be advocated:

A wider use and dissemination of birth control may seem a contradiction of this aim, but (*Continued on page* 71)

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Social Classes and the Birthrate

By FRANK W. NOTESTEIN

IT is common knowledge that our birthrate is falling, and there is reason to believe that it has been falling since at least the early part of the nineteenth century. Little information exists, however, concerning the incidence of this decline or the reasons for it. We know that birthrates are higher in rural than in urban communities, and that there are certain differences in the fertility of our native-white, foreign and Negro populations. On other points our knowledge is sketchy. We have only hazy information concerning the differences in the birthrates of the broad social-economic classes of our population, and none concerning changes in those differences. Virtually nothing is known of the manner in which the various classes of the population are recruited from each other, and even less is known of the physical and mental characteristics of those classes. Yet all of these factors, and changes in them, will be important in determining the size and character of our future population, our economic organization, the mores of our family life and the effectiveness of our efforts for social amelioration.

The realization of the importance of these problems, supplemented by too little knowledge of the actual facts, has led a host of well-meaning enthusiasts into all manner of contradictory anxieties. At one time we are told that the race is deteriorating if not actually dying out, at another we are warned to plan for the subsistence of the future's added millions, but always we are urged to do something about it.

There are indications, however, of a growing interest in the collection of more adequate information. For the first time the Bureau of the Census is undertaking a tabulation of the returns of the population census by families. From this tabulation some indication of the differences in the fertility of various social-economic groups may be secured. Several private investigations of the subject are also either under way or projected.

The value of such studies of differences in the present fertility of the social classes is impaired unless it is possible to compare them with studies of past differences, to determine trends, and to interpret those trends in the light of other social changes. Unhappily little of this essential background is known. Such investigations as have been made either are based on small samples relating to selected groups of relatively high social status, or are indirect statistical approaches to the subject from which little more than suggestive results could be expected.

Fortunately we are not entirely dependent on these valuable but still inadequate studies. Excellent material for the study of certain aspects of the fertility problem was collected in the population census of 1910, when each married woman in the United States was asked, among other things, the number of children she had borne, the number of children still living, the number of times she had been married, and the length of the present marriage. The unfortunate part is that none of these returns were ever tabulated by the Bureau of the Census.

The importance of these unpublished census data led the Milbank Memorial Fund to undertake the tabulation of a sample of them from the original enumeration sheets. The sample comprises data for approximately 100,000 married women who lived north of the Mason-Dixon Line in 1910. It includes only those women of native-white parentage whose husbands were of like parentage, and comprises an adequate sample of each of the broad social classes. The material presented here is further limited to the 70,000 women of this sample who were of child-bearing age, who had been married only once, and whose husbands had not been married previously. This group is divided into two parts: the urban sample, taken from the thirty-three northern cities having total populations of between 100,000 and 500,000 in 1910, and comprising data for about 40,000 wives; and the rural sample, taken from rural parts of seventy-four neighboring counties, and comprising data for about 30,000 wives.

THE women of the urban sample were separated, on the basis of the census returns of the husband's occupation, into four broad social classes: professional, business, skilled workers, and unskilled laborers, and those of the rural sample into: farm owners, farm renters, and farm laborers. The rural classes are exactly what the names indicate, but the titles of the urban classes, which include a wide range of occupations, must be suggestive rather than precise. Nevertheless the urban classes are dominated by the groups from which the titles are taken and it is believed that each of them differed from the others with respect to its standards of education and achievement and in its general social environment.

The number of children ever born to a group of married women is an unsatisfactory index of the net fertility of the group unless the age distribution of the women is taken into account. For example, the fact that the wives of farm laborers had borne fewer children than those of farm owners does not indicate that the wives of farm laborers were less

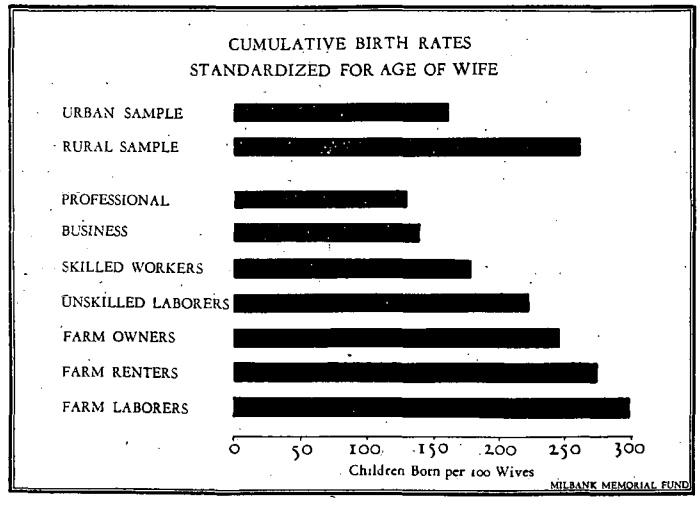

Chart 1

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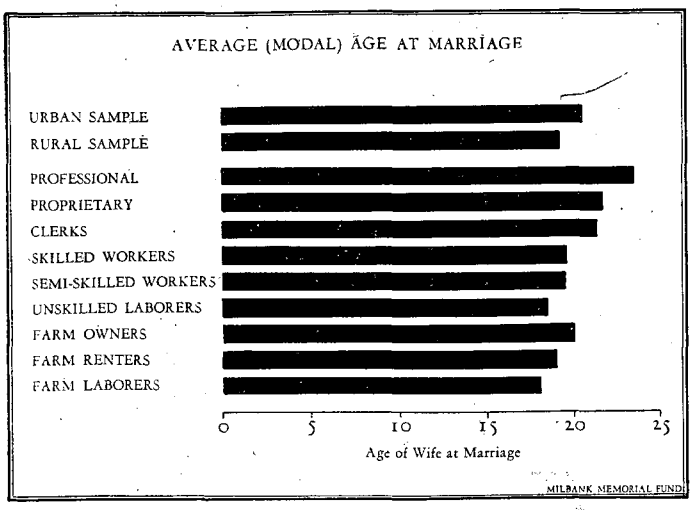

Chart 2

fertile. It only reflects the fact that they were younger and had had less opportunity to bear children. The influence of such differences in age distributions is avoided by the use of the standardized birthrates presented in Chart 1. These rates indicate the number of children which would have been born to the wives of each class had the age distribution of the wives been the same as that of a standard population—the standard in this case being the combined urban and rural samples.

It is apparent from Chart 1 that rural wives were more fertile than those living in cities. The birthrate for the former group was 63 per cent higher than that for the latter. At the time the census was taken the average country wife had borne one more child than her urban neighbor. To put it another way, in the country only 385 married women of standard age distribution were required for the birth of 1000 children, while in the city 625 were needed.

The ranking of the urban social classes by fertility was exactly opposite that conventionally given to their social status. The rate for the most fertile class, the unskilled laborers, was 73 per cent higher than that for the least fertile, the professional class. If the classes had had the age distribution of the standard, the birth of 1000 children in each class would have required 775 wives in the professional class, 714 in the business class, 559 in the skilled worker class, and 448 in the unskilled laborer class. The fact that the difference between the rates for the two white-collar classes was less than half as large as the remaining differences, probably reflects the relatively similar social status of the two classes.

In the case of the rural classes, the rates, though differing less than those just noted, also indicate a definite inverse relation between fertility and social status. The rate for the most fertile class, the farm laborers, was 21 per cent higher than that for the least fertile class, the farm owners. In a population the age of our standard, the birth of 1000 children in each class would have required 405 wives of farm owners, 364 wives of farm renters, and 334 wives of farm laborers. Not only is the rural group, taken as a whole, more fertile than the entire urban group, but the least fertile rural class, the farm owners, had a birthrate 11 per cent higher than the most fertile urban class, the unskilled laborers.

Only two of the many factors associated with the differential net fertility of the social classes may be examined here. They are, age of the wife at marriage and the no-child family.

Age of the wife at marriage is related to the net fertility of a class in several ways. It limits the length of exposure to the risk of childbirth, and it determines the ages during which that exposure takes place. There is also reason to believe that it is associated with infant mortality. Quite apart from the question of fertility, age at marriage may be associated with the economic status of the family, and through its economic status with its health, education and character.

Chart 2 presents the average (modal, i.e., the most frequent) age at marriage for the women of each social class who had been married from five to nine years at the time of the census. The average age at marriage for women living in the city was 1.3 years higher than for those in the country. The average woman of the professional class married more than five years later than the average woman of the farm laborer class. On the other hand the most popular age for marriage was higher in the farm owner class than in each of the three "lowest" urban classes. In both the urban and rural samples the rank of the classes by age at marriage was the same as that customarily assigned to their social status.

A suggestion of the importance of early marriage in bringing about the relatively high fertility of the lower status classes may be seen from the manner in which the birthrate declines with advancing age at marriage. Urban women who married at ages under 20 had 55 more children per 100 than those who married between 20 and 25, and nearly five times as many children as those who married between 35 and 45. Among rural women the decline in the birthrate with advancing age at marriage was even more pronounced.

IT is beyond the scope of this discussion to present a complete analysis of the birthrates by age at marriage for each social class. One or two points concerning them may be mentioned. Two explanations of the relatively low fertility of the "upper" classes are frequently advanced. One is that these classes are less fecund (i.e., have lower reproductive potentialities) than the "lower" classes, and the other is that they practice more voluntary control of conception. An examination of the trends of the birthrates by age at marriage may throw some light on the matter. The relative deficiency in the birthrate for the upper classes appears to have been greatest for the youngest marriages and to have grown rapidly smaller with advancing age at marriage. In fact, for marriages contracted after the wife was twenty-five years of age, the rates for the professional class exceeded those for the skilled worker class for the same ages and approximated those for the unskilled laborer class. (*Continued on page* 72)

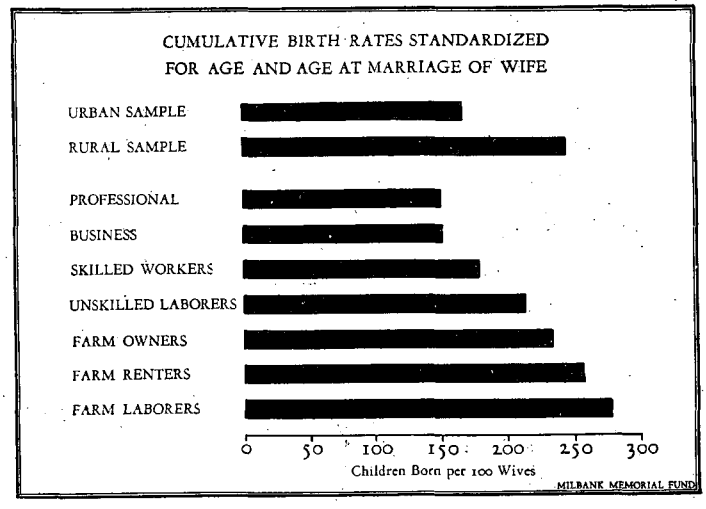

Chart 3

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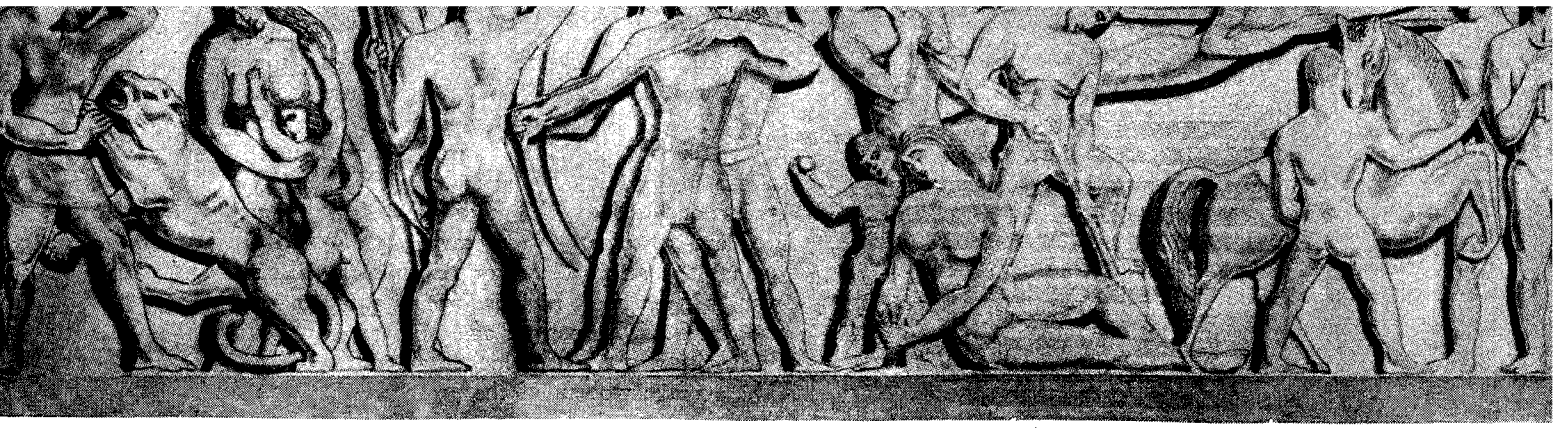

Primitive Man *The Discoverer* *The Indians* *Pioneers* *Scier*

Zorach's Sculpture

ONE of the pleasantest sights of Greenwich Village of the past ten years has been William Zorach walking with his children—a serious man with a fine head; two eager, natural youngsters. I have always added Mrs. Zorach to the group even when she was not present, Marguerite Zorach whose textiles and painting contribute to the rich background of these children. Now that Zorach has worked himself into his stride, has found out what he wants to do in art and how, he has produced a masterpiece of modern sculpture, the Mother and Child. It was three years in the making, was carved bit by bit out of a block of brittle Spanish marble into completion—for Zorach believes in direct sculpture, creation resembling that of the God of Nature rather than of Adam. The crouching figure is five and a half feet high, as if nothing less grand would satisfy the expression of maternity. The head of the adolescent daughter (opposite page) is another recent work, and the charming childish kiss a wood carving of a few years back. Although Zorach has made small designs for decorative purposes, his gift for the monumental makes him particularly fitted to work on ornament for public buildings, as the strong drawing above, for a frieze, reviewing the history of man in America would prove.—F. L. K.

Mother and Child

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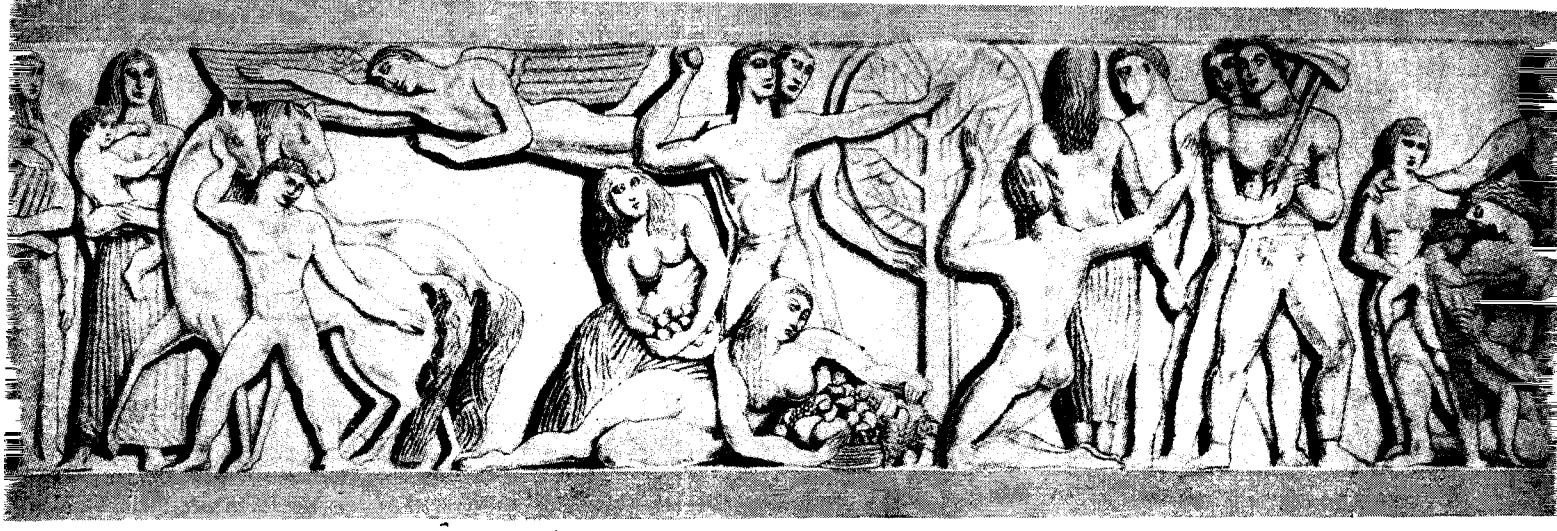


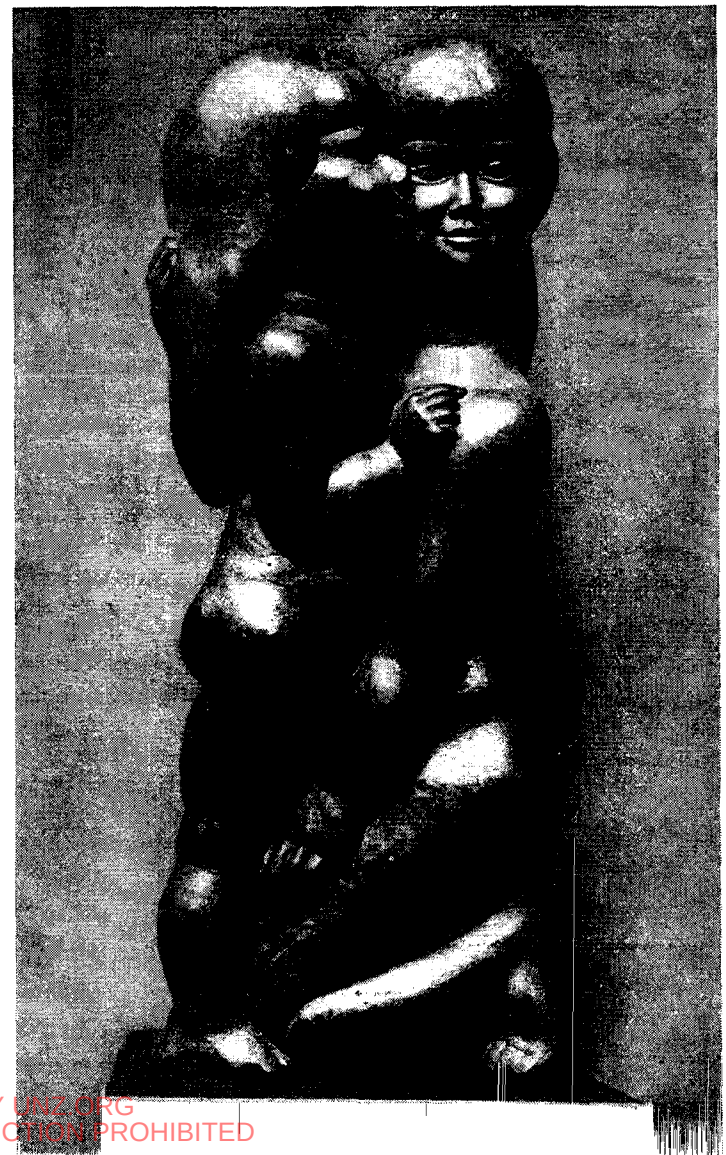
ulture *Fruitfulness of Life* *Workmen* *Modern Ma*

The drawing across these two pages (copyright 1931 by the artist) is a design proposed for the frieze of the Los Angeles City Hall (John C. Austin, Albert C. Martin and John Parkinson, associated architects), to be ninety feet long and nine feet high. William Zorach's work is reproduced by courtesy of the Downtown Gallery, New York.

Artist's Daughter

Two Children

Courtesy The Arts Magazine



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The Race Called American

By GUY IRVING BURCH

FEW problems are more complex or more provocative of emotion than that of race. A brief consideration must limit itself to a particular phase of the general subject and deal chiefly with facts rather than theories. This article will outline certain phases of the racial composition of the United States and from this suggest something of the influence that various races have had upon us.

Perhaps the most practical definition of race in world affairs is that which is almost the equivalent of nationality. It is not my purpose here to delve into the larger aspects of race to discuss as such the Nordic, Alpine, Mediterranean and Negroid; or even the white, black, yellow, brown and red. We will be more concerned with "races or peoples" as defined by the Bureau of Immigration; more concerned for example, with the English, German and French "races" than with the more inclusive categories.

There are a number of cases however in which the "nationality" definition of race has a tendency to confuse rather than simplify the situation, especially on such practical problems as immigration policy. Many Hebrews have come to this country from Russia and Germany, and this immigration is classed as Hebrew in race rather than Russian or German. If we had a racial classification termed Slavic in our immigration reports, a considerable proportion of the immigration coming from Germany, for instance, probably would be termed Slavic.

In any discussion of race there always arises the query of superiority. For the purpose of this article at least, it may be assumed that all races are innately equal. On the question of dominance however there is more agreement. It is fairly generally admitted that at the present time and perhaps during the last two centuries, the Nordic race has been the dominant race; and that among Nordics the English have been in the foreground. In government and the science of politics it is difficult to understand how the position of the English can be challenged successfully. They were also the leaders in the Industrial Revolution, a leadership which, coupled with the ability to govern, permitted the English, with the important aid of the Scots, Welsh and Irish, to construct perhaps the greatest empire the world has ever known.

As the English took the initiative soon after the discovery of the New World and the destruction of the Spanish power, we should naturally expect to find a great number in North America during the eighteenth century. In 1790 when the first census was taken, there were about 3,250,000 white persons and about 750,000 Negroes in this country. According to the report of a special committee of the American Council of Learned Societies, made public in 1929, 80.7 per cent of the white stock in this country in 1790 came originally from Great Britain and Ireland. English and Welsh, according to this committee, comprised 2,024,000 of the total white population of 3,250,000, or 62.2 per cent; Scots 276,000, or 8.5 per cent; and of the Irish population, 200,000, or 6.2 per cent, were credited to North Ireland and 120,000, or 3.8 per cent, to the South Irish, though the committee of the Learned Societies placed a question mark after the tabulations for Ulster (North Ireland) and the South Irish. Figures for the non-British stocks given by the committee were: German 291,000, or 9 per cent of the total white population; Dutch 114,000, or 3.5 per cent; French 83,000, or 2.5 per cent; Swedish 16,000, or 0.5 per cent; all others 122,000, or 3.8 per cent.

Thus it is quite evident that of the racial stocks that established this nation's institutions and ideals practically 100 per cent came from countries of Northern and Western Europe, and that a considerable majority came from the countries of Great Britain and North Ireland. Furthermore, remarks Bishop Canevin (Catholic Growth in the United States: Catholic Truth Society), "The settlers of the original thirteen colonies were nearly all Protestants. . . ."

The earlier racial stocks came to this country, the greater their influence is likely to be on the course of the United States, not only because of the priority but also because of the large families and rapid increase in population of the early settlers. "Statistics as to the number and nationality of immigrants coming to the United States from 1790 to 1820," Bishop Canevin continues, "are not as definite as the statistics after that period, but there seems to be an agreement of opinion among the best authorities, that the total number did not exceed 250,000 at the highest. The dominant elements were English, Scots, Irish and German. The early German immigrants were largely Protestants, and the same may be said of the early Irish immigrants who came chiefly from the North of Ireland."

THIS religious classification is very important as regards the influence of race on the course of the United States, because the North of Ireland is largely (and was perhaps more so in 1800) composed of English and Scots racial stocks. This religious classification also gives an insight into the early German immigration. While the immigration to this country about 1800 from Ireland and Germany was practically all Protestant, in 1900, Bishop Canevin declares, 75 per cent of the Irish immigration was Catholic, as was 37 per cent of the German immigration.

Between 1820 and 1845, immigration from Nordic countries of Northern and Western Europe increased gradually. Ireland, Germany and Great Britain lead in number of immigrants in the order named. From 1841 to 1850, the number from the same three countries or groups increased rapidly and created the first big wave of immigration to this country. The potato famine in Ireland, coupled with the practicability of the steamship for transportation of large numbers of immigrants, were the chief factors involved.

During the decade 1851-1860, German immigration took the lead from Ireland in numbers, while the steady stream of British immigration from Europe was augmented by immigration from Canada. Immigration from two radically different parts of the world also began to rapidly increase; that is, from China and the Scandinavian countries. But during the decade 1881-1890 Chinese immigration was practically excluded. During the thirty years 1861 to 1890, German immigration continued to lead; Great Britain took

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Ireland's place and the influx from Canada and the Scandinavian countries mounted rapidly, each sending nearly as many immigrants as Ireland.

About 1880, Slavic and Mediterranean races from Southern and Eastern Europe began slowly to contribute to our population, and in 1895, when the tide of immigration from all countries was at a low ebb, immigration from Southern and Eastern Europe took the lead from the Nordic countries of Northern and Western Europe. During the decade 1901-1910, more than 2,000,000 came respectively from both Italy and Austria-Hungary, and 1,500,000 from Russia. During this decade Great Britain and the Scandinavian countries supplied most of the immigration from countries of Northern and Western Europe, while immigration from Germany and Ireland fell off considerably.

THE decade 1911-1920, was largely a repetition of the preceding one, except that the World War reduced immigration radically, especially that coming from Germany and the Central Powers. The next ten years (1921-1930) saw a period of transition. The Immigration Acts of 1921 and 1924 turned the great bulk of our immigration from countries of Southern and Eastern Europe back to countries of Northern and Western Europe. During this period Canada supplied a million immigrants and Mexico nearly half that number.

The total recorded immigration to the United States between 1820 and 1930 was 37,762,012. Of the 7,000,000 who entered from Great Britain and Canada, about 4,250,000 came from the former and nearly 3,000,000 from the latter. Nearly 6,000,000 came from Germany and about 4,500,000 from Ireland. The Scandinavian countries and Holland contributed 2,500,000 immigrants.

Insofar as quantity of immigration is concerned, that from Italy, Russia and Austria-Hungary compares favorably with immigration from Great Britain, Germany and Ireland, but the influence of the latter group on the institutions and ideals of this country have perhaps been many times greater. For instance, the British, especially the English, not only colonized this country and laid firm foundations for a new nation during the seventeenth and eighteenth centuries, but also continued a great volume of immigration during the nineteenth century. Practically all of the most eminent leaders of the American Revolution and founders of this nation were of the Anglo-Saxon stock, as have been the great majority of the American presidents. Furthermore the institutions, ideals and language of this country are nearer akin to those of England than to those of any other country.

Perhaps the best criterion upon which to base a quantitative analysis of the influence of various races on the culture of this country is the national origins computation concerning the composition of the white population of this country in 1920. In taking this basis of immigration restriction as a criterion in the racial sense, it should be remembered that it does not include the influence which may have been developed in this country by the immigrants from Canada of French and British stock since it is based solely on immigration direct from Europe.

The national origins basis gives Great Britain and North Ireland about 43 per cent of the quota immigration from Europe, while it is quite probable that the influence of this racial stock on this country has been considerably more than the influence of all other racial groups combined. To Germany is allotted 16 per cent of the total quota immigration; it is quite probable that the influence of the German race in this country has been in that degree. South Ireland has a quota of nearly 12 per cent, and after witnessing a St. Patrick's Day parade up Fifth Avenue few will doubt that the South Irish element in our population has had that amount of influence in this country.

Among the countries of Southern and Eastern Europe, Poland and Italy each have about 4 per cent of the total quota of immigration; Czechoslovakia and Russia 2 per cent apiece. These figures would seem to the writer to represent fairly the influence of these races or nationalities on the culture of this country.

Of the countries of Northern and Western Europe, France, Holland and Sweden each have a quota of about 2 per cent, and there is little doubt but that these races or nationalities have supplied fully this amount of influence in this country, especially when we remember that the French and Dutch helped shape the institutions of this country and that the quality of the Scandinavian immigration has been very high.

Of course the quality of the racial stocks should be considered in any analysis of this kind. A number of tests have been made of the quality of racial stocks in this country, such as the army psychological tests during the War and statistics of persons in Who's Who, as well as who's who in public institutions. In practically every test the English-speaking peoples have ranked the highest, a result which has given rise to the criticism that the conditions of the tests favored those who spoke English. As the races from countries of Northern and Western Europe also ranked high, it has been suggested that the customs and mode of life in this country are similar to those in Northern and Western Europe and thus the conditions of the tests favored also these racial groups. On this point there has been a counter suggestion to the effect that if races are to live in this country their true value to it is fairly well measured by the tests considered.

CRITERIA of illiteracy rates, homicide rates, mortality rates and standard of living of European countries have been advanced to support tests in this country and Canada. But these efforts in turn were criticized on the grounds that the population of Southern and Eastern Europe is largely agricultural in occupation, while that of Northern and Western Europe is largely industrial, and that these differences may account for the differences in these three particulars.

In this brief outline it is possible only to mention three most important racial elements in the population of this country: the Indian, the Hebrew and the Negro. As these racial groups are not readily accepted or do not readily accept mixture with other races, it is difficult to evaluate their influence on the course of the United States. In respect to assimilation by intermarriage the Dominion Bureau of Statistics of Canada has discovered that races from Northern and Western Europe intermarry with other races several times more readily than do races from Southern and Eastern Europe, and that some stocks, such as the Orientals, Hebrews and certain of the Slavic peoples, are practically unassimilable by marriage. The Negro was unwittingly a party to perhaps the greatest disaster that ever befell this country, the Civil War, which practically annihilated the flower of an entire generation of the best racial stocks of the United States. How the Hebrew with his brilliant individual achievements will fare as a race in this country it is perhaps too early to predict. On the whole perhaps the influence of the Indian on the course of this Nation has been very healthy—except from the point of view of his own well-being and survival—and certainly most picturesque.

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Culture and Personality

By OTTO KLINEBERG

ATTENTION is most frequently called to the practical difficulties in the way of realizing a program of eugenics. To the student of culture and more particularly of the differences between the cultures or civilizations of different peoples, there are at least two other problems of primary importance.

The comparison of cultures cannot fail to impress one with the relativity of all our values and with the consequent difficulty of deciding just which qualities are so valuable to the human race that an effort should be made, by selective breeding, to increase the frequency of their occurrence. There are other standards besides those which we have adopted and we have no right to judge the achievement of other groups by criteria which fit only our own. Higher mathematics are not at a premium on Vancouver Island and New York does not particularly honor a skilful builder of canoes. Hindus prize a certain form of mystical contemplation much more highly than the ability to run a hundred yards in less than ten seconds. Among the Dakota Indians, until recently, those women who could do the best bead-work were the most valued members of the community.

If culture and cultures are viewed dispassionately and objectively, free from the standards which one's own group has imposed, there is no way of deciding which criteria ought to be adopted. Shall we breed mystics or bead-workers? Athletes or mathematicians? Philosophers or builders of empire? And in what proportion? Different cultures value these qualities differently. What fits into the pattern of one group is alien and unworthy in another. Who is to decide between them? And with what right?

The student of cultures sees also that, largely as the result of this difference in evaluation, the development of any quality may be stimulated by one culture, modified by a second and perhaps completely suppressed by a third. The character of an individual member of any community will be shaped, at least in part, by the character of the community in which he lives; whether or not he is to possess a certain quality will be determined to some degree by the standards of his group. The eugenist who plans to improve the human race by a selective breeding of such qualities must know, therefore, to what extent they are due to hereditary, and to what extent to cultural, factors.

Eugenists would probably give their approval to that quality which we may call the "competitive spirit." In our society it has definite value; it helps one to achieve and maintain a position of which the group approves; it is encouraged on the athletic field and in the classroom. Among the Dakota (Sioux) Indians, however, it is not prized nearly so highly, and certain of its expressions are definitely discouraged. A Dakota child is taught that it is unmannerly and undignified to try too obviously to get ahead of his fellows. In a classroom it is unbecoming for him to hurry with his answer to a question which the teacher asks; the other children will think he is trying to prove himself superior. So sensitive are children to this possible reproach that very often the teacher will fail to elicit any response from her class even when she is perfectly sure that they know the answer to her question. Among the Zuñi the competitive spirit is subject to even more definite repression and that person who attempts to "stand out" in the community and who deviates at all markedly from the accepted pattern, suffers the disapproval of all the others.

Our culture also places a premium on speed, on getting things done quickly. Is this an hereditary or an acquired trait? Experimental investigations among American Indian children have shown them to be somewhat deficient in this quality; they are in less of a hurry to get things done and they take a longer time to do them. On the other hand they work more carefully and make fewer errors than do white children of the same age. This is an interesting qualitative difference between the two groups which reaches deep into the two cultures. American Indians do not hurry; they see no reason why they should; hurrying is undignified and unnecessary. Children are taught also not to speak carelessly or to do things without thinking, and they develop a keen interest in working neatly and accurately. In the classroom (I speak particularly of Dakota children whom I have observed) their written lessons surpass those of white children in the care which they take to have them letter-perfect. An Indian child will rewrite his lesson three or four times rather than have it disfigured by corrections and erasures which mar its perfect appearance. And time is sacrificed; it has no special importance.

THE ability to bear pain without flinching, to suffer for whatever cause one believes to be important, is a quality which surely has value for the race. The little Plains Indian boy is taught that to cry out when he is hurt is a sign of weakness, that if he does cry out the other boys will have nothing more to do with him; that the stoical acceptance of pain is part of his duty as a man. Later in life this ability to suffer without a sign is made the basis of much of his religious life and of his success as a warrior. On the other hand, the pain which comes with the death of a wife or a child is expressed most freely; such an expression of sorrow is definitely expected and encouraged by the group. The English boy educated in the great public schools of England, is taught that both kinds of pain are to be hidden; that he must not wear his heart upon his sleeve. Later in life it is usually impossible to judge of his feeling from his expression, or to gauge the extent of his joy or of his sorrow by any outward sign. The young Neapolitan cries out when he is hurt and laughs aloud when he is happy. All about him people are doing just that and no one thinks of stopping him. Why should he hide his feelings? He has no reason to be ashamed of them. In the home and on the street, on the stage as in real life, all the strong men whom he admires laugh when they are gay and weep most bitterly when they suffer. Those are the habits of his group and they become his habits.

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The individual has his personality shaped by the pattern of the culture into which he happens to be born. If he grows up among the Dakota Indians of the Plains he will probably proceed about his business slowly and with deliberation, he will not try particularly hard to get ahead of his neighbors, he will bear pain stoically, and he will maintain a fair degree of reserve in his dealings with his fellowmen. If he is born into a Negro family in the South, he will probably get a great deal of enjoyment out of music and dancing, he will tend to take his sorrows lightly and he will be happy only when in the company of his fellows. There will be marked individual differences, but most of the members of any group will bear the marks of one particular pattern.

There is the possibility that these differences are not cultural but racial or hereditary in character, that the individual Plains Indian is as he is, not because of the influence of the group during his lifetime, but because of what he has inherited from his Indian ancestry. For example, his stoical acceptance of pain may be due to the fact that his skin is physiologically less sensitive. A slower speed may be caused by a slower rate of metabolism, the chemical changes which supply the body with energy. His lack of "drive" may mean that his adrenal glands are not functioning as actively as those of whites. The most serious objection to this racial hypothesis arises from the occurrence of marked differences between various groups of the same race living under differing cultural and environmental conditions. On the physical side there is evidence showing how even stature and head-form for example, in any particular racial group, may undergo the modifying influence of environment. On the psychological side children living in rural districts differ in the speed of their reactions and in their general intellectual level from others of the same racial origin living in the city; northern Negroes differ temperamentally and intellectually from southern Negroes, and the Indians of Arizona and New Mexico from those of the Plains. On the hypothesis of innate differences due to race one cannot explain these wide intra-racial variations; in the meantime the belief in innate racial differences rests upon an assumption which we must consider to be unproven.

Courtesy Frank K. M. Rehn Galleries, New York

RUBY GREEN SINGING *By James Chapin*

There is even more direct evidence of a cultural or environmental effect. Children coming from the country to the city become more "intelligent," that is they obtain better results on the intelligence tests, when they have lived for some time in the new and more favorable environment. The writer gave intelligence tests to twelve-year-old Negro boys, all of them born in rural Louisiana but now living in New Orleans, and found a definite tendency for an improvement in the test scores directly proportionate to the length of time they had been living in the city. The results cannot be due to a selective migration of the best stocks from the country to the city, because all of these subjects had migrated and had therefore all responded to whatever "selection" might be operative. Another study showed that those southern-born Negro boys who had lived longer in New York City worked more quickly, that is, had speedier motor reactions, than those who had more recently come from the South. Speed of reaction, therefore, and intelligence, as far as they can be studied experimentally, are at least in part the function of culture and environment.

American Negroes are musical. There are a great many exceptions, of course, but in general it will probably be agreed that they have a highly developed musical sense and a marked ability to produce and interpret music of a more or less characteristic variety. Is this a racial trait? In the first place, African Negroes are not particularly musical; they have their music, often characterized by a very complicated rhythmic pattern, but music does not occupy a sufficiently important place in the various African cultures to warrant the assumption that African chromosomes bear more than the average share of musical genes. And in the second place, the musical interest of the individual American Negro can be explained in terms of culture without any need to assume a peculiar biological or physiological constitution. A child growing up in a southern rural Negro community can hardly help being musical; in the South Carolina Low Country, for example, the children will hear the men singing at work, they will hear spirituals and "shouts" at the almost-daily meetings and services in the church, and there will be an occasional evening of "blues" and banjos by the fireside near the "big house." In such an atmosphere a child need not be particularly gifted (*Continued on page* 67)

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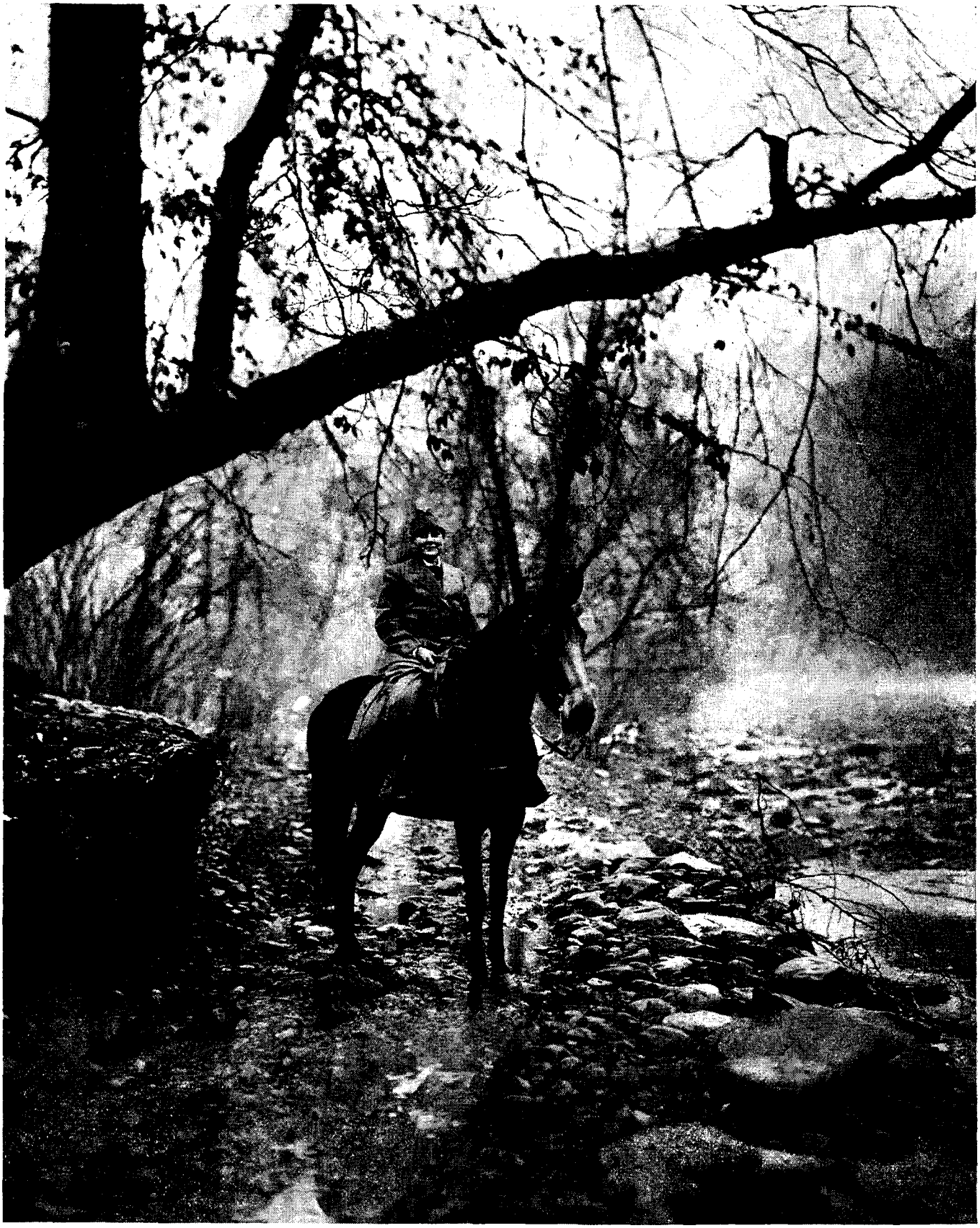

Mrs. Breckinridge, Nurse-on-Horseback

THE HEALTH PATROL

Like the picturesque mounted police of Canada the women of the Frontier Nursing Service patrol the Appalachians. With saddle-bags full of medical supplies they beat off the lurking dangers of infant mortality and mothers' deaths in childbirth, penetrating the highlands over bridle paths, through bridge-less streams, winter and summer

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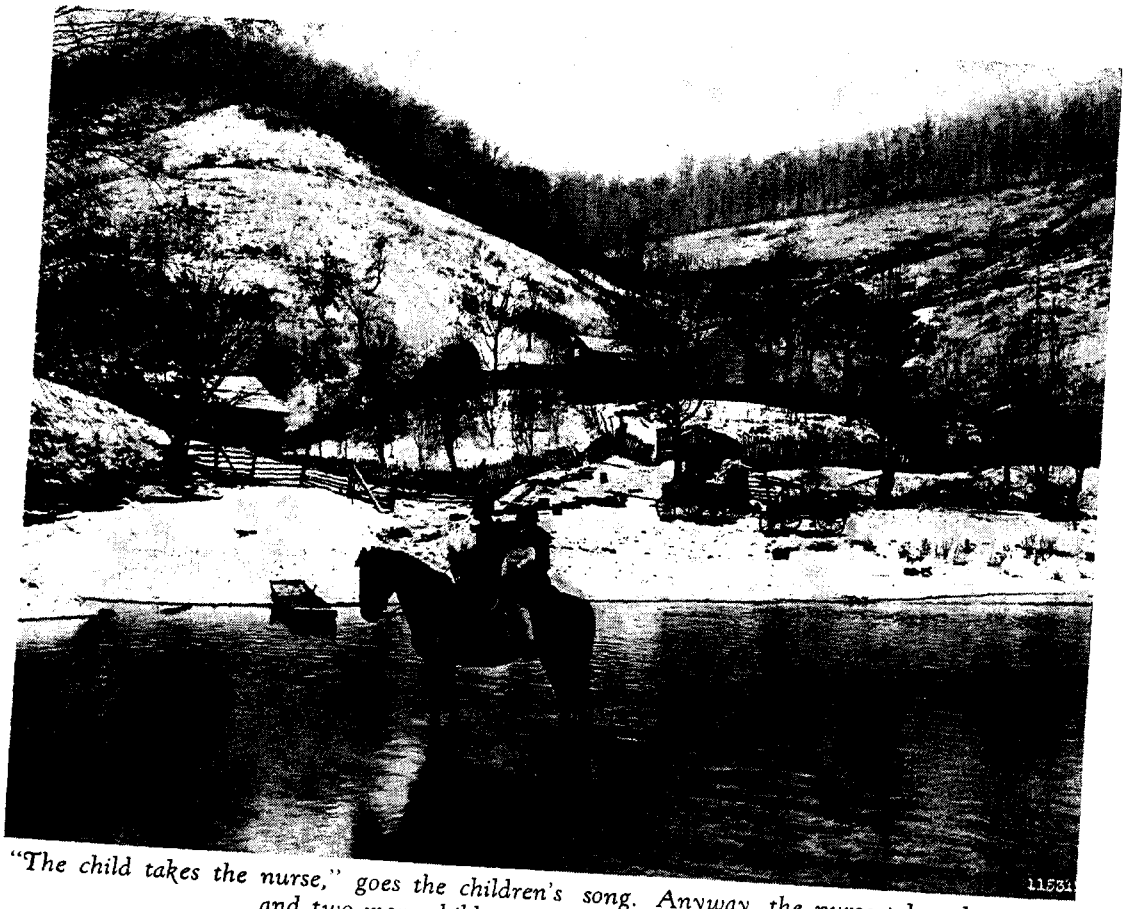

"The child takes the nurse," goes the children's song. Anyway, the nurse takes the mother and two more children to a district health center

This mountain horse totes the whole family to the source of inoculations and special clinics. The horse is in health work down to his tail

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Photographs Canfield & Shook, Inc., Louisville

THREE NORDICS

In October 1926 Mary Breckinridge's story of the first year's work of her nurses on horseback appeared in the Survey Graphic. The Frontier Nursing Service can now point to nine district nursing centers in full operation and work spread over an area of more than a thousand square miles. It is bringing to our oldest Anglo-Saxon stock the advantages of health that have long been extended to the mixed populations of the large cities. The Service is "rarin' to go" on until it reaches all the fifteen million frontier people of America

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Are We Fostering the Unfit?

By HAVEN EMERSON, M.D.

WHO are they, these unfit? Why are there unfit persons, those who lack suitable powers or qualifications, who fail in the propriety of their adaptation to character or place and suffer disqualification by reason of disability, incompetence or some unworthiness? What meaning shall we give to this fostering of folks? Is it chiefly the nourishing and cherishing of them which we query, or do our critics chide us for encouraging and indulging habitual unfitness? Shall we distinguish between saving the drowning and the prevention of rickets? Is there unanimous approval for an internal operation for appendicitis, yet doubt as to the wisdom of salvaging the moron?

Oftenest in recent years has come the complaint that by reducing infant mortality society is burdened with unprofitable childhood rather than advanced by an economy of life. In two great cities the answer has been attempted by recourse to the children themselves, on the theory that if an essential blunder had been committed by an undiscriminating wholesale care of every living breathing infant, the two-year toddlers of the next few years would reveal an excess of disability, a fragility and incapacity to resist or survive. Or, briefly, that if a mistake is made in helping babies through their first year the deaths in the one-to-five-year group will promptly climb.

As long ago as 1915 Dr. Josephine Baker answered for New York City, and ten years later the experience of Chicago was related by Dr. I. S. Falk. There is no substantial disagreement between them, or by statistical critics with their conclusions. The more successfully that infancy is guided around the hurdles of diarrheal deaths and the starvations of unsuitable diets, the sturdier are the years of early childhood, the better the runabout's resistance to the infections which develop life-long immunities or kill in the process.

There are those who assume a stillbirth to be a social good fortune, and the successful prevention of most of them by antisyphilitic treatment of the expectant mother to be a mischievous interference with Nature's plan to clear away families blighted by *lues venerea*. Are we to watch the 30 per cent of Negro mothers who are syphilitic go on to a frustration of their maternity in the belief that we are but passive members of a biological procession, divinely led? Any such assumption throws us back upon the discarded principle of disease as a penalty for wrong-doing, the aboriginal idea that by death or exorcism the sin personal or social can be discharged.

When infantile paralysis stalked unhindered through the streets of New York it seemed to pick the brightest, liveliest children on the block, and students of human types who visited the wards of Willard Parker Hospital while thirty-five hundred maimed and dying were under care remarked upon the similarity of beauty and courage in the faces of these patients. If the skill of a Landsteiner, the resourcefulness of a Park or Flexner should presently put in our hands the power to prevent and cure this disease, could we be charged with turning back the clock of human progress if we urged immunization at birth, and charged parents with neglect if they failed for reasons of religious belief or cultism to provide specific curative treatment? What would be said in the 37,000 households of the United States where polio entered to blight or kill, if society decided to refrain from the public application of such resources?

Why ask and answer such questions indirectly when the human reaction of the past thirty years is clear and irrevocable in a parallel picture? Put yourself in your grandmother's home of 1872 when diphtheria harvested more lives of children under five than we sacrificed last year at all ages on the altar of tuberculosis. What did your parents do between 1895 and 1900 when the first courageous physicians promised cures with diphtheria antitoxin while a 40 per cent mortality was customary? Did they sign a self-denying ordinance and admit that the Lord had picked their particular young hopeful as one of the 40 per cent "unfit"? Look at the answer in figures. And this is the same answer which will be given every time by the judge and jury of society, the parents of the nations who are concerned with the ultimate minima and maxima of human security, the right to have and to hold their own children.

AND again let us be quite pragmatic about it. Has any city population risen in its wrath and destroyed the municipal filter beds, the chlorination depot, the pasteurizing plants because these, forsooth, have guaranteed that one instead of 40 unfit among each 100,000 should die of typhoid fever in a year? Do we hear that the addition of iodine to the water supply of Rochester has been a source of acrimonious discourse in prose and pulpit because disfigurement of the adolescent and thyroid irritability of the parent is now reduced to a vanishing point, and various and sundry potentially "unfit" thus salvaged when they might simply have been sacrificed as nature would have permitted?

In Dr. Victor Vaughan's fascinating commentary on the happy war between man and his bacterial guests—Epidemiology and Public Health, packed with the amalgamated history of the medical sciences and sociology—this wise initiator of Michigan's fine example in the teaching and practice of preventive medicine compares the presence of communicable disease in a community with the effect of a Gatling gun let loose in a public thoroughfare. Chance is the determinant. The bullets are as drops of rain and arrive at their objective regardless of the inherent merit of the hit. Bacteria wound like bullets, and in the accidents of their distribution have but an aimless mark, their own survival.

In no field better than in that of tuberculosis is the answer so clear that in replacing chance by social control we are enabling the average man to realize his potentialities. When tuberculosis was in its heyday with us, as it is today in France and Greece, the burden was quite as much in the social quality of death as in its mass or total amount.

Society as a biological concept is concerned little if at all with such deaths as occur in senescence after the continuation of the family is assured, or among those who are passengers

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rather than boatmen in the stream of human traffic. For this reason when the deaths from tuberculosis among adults have been shifted from the ages of child-bearing and rearing to the decades after the children have "flown the coop" society has scored a success. That mystical story of postponing deaths, of increasing the expectancy of life, of advancing the age of survival, becomes a reality of much practical importance when you correlate family case records of the New York Association for Improving the Condition of the Poor in 1890 and those of today with the distribution of tuberculosis deaths then and now. When cause and effect are so close to each other and the results so practical, social conviction of the worth of efforts is quick and clear. Society has carried a steadily decreasing burden of family rehabilitation on account of the disease tuberculosis. Instead of the customary carrying of a family of half a dozen children, all under the age of six, through orphandom to a handicapped and often deformed social life through a period of ten years, the rule now is that one instead of both parents is invalided, and this for a period of treatment tending to arrest, and at an age in family life when the children are already approaching independence, or the completion of schooling.

The age at death of tuberculosis, diabetes, heart disease, cancer are all being pushed along beyond the probable age of greatest social contribution of the individual.

As the average length of life has been advanced from 40 to 60 years in the past two generations we find the three sectors of life extended, the first third devoted to preparation for the game now up to 20 years; participation in full fitness to contribute a similar length of years up to 40; and the decline, though similarly lengthened to the age of 60, less freighted with dependence and distress. Much of the wealth of today flows from the larger fraction of lives carried on in health during the years of man's chief effective productivity.

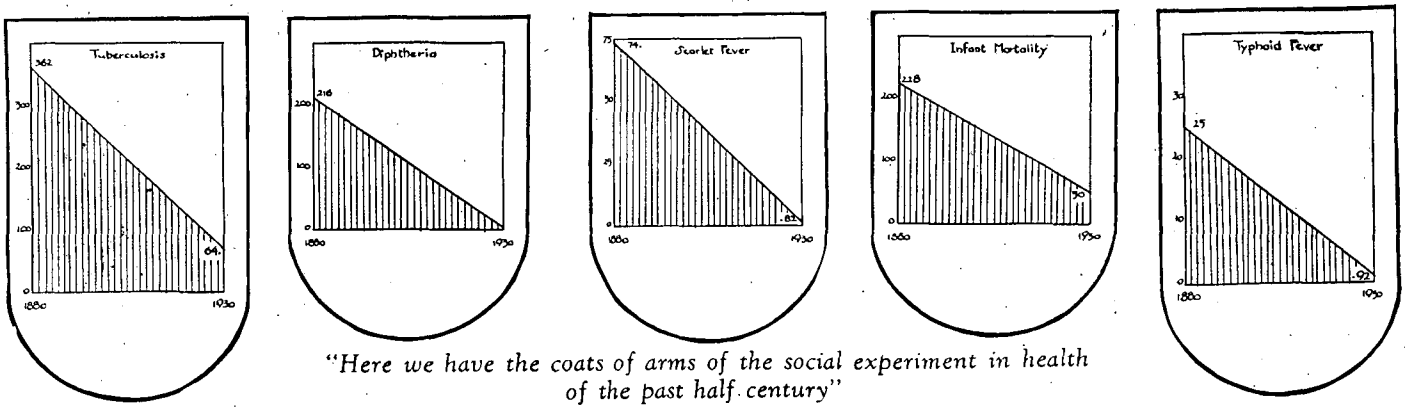
Glance at the good old days of Geneva in the sixteenth to eighteenth centuries when the probable average length of life was from 21 to 34 years; or to the century of New England typified in Massachusetts' record with life expectancy of 35 years in 1789 and 45 years in 1897. Remember that India and Russia today offer only the security of 26 years of life that Geneva knew in the seventeenth century. Then decide for yourself whether the saving of life in this country, chiefly among children and young adults, has been a fostering of the unfit; for we now enjoy a probability of survival to 60 years in the United States, a gain of more than 10 years of life for the newborn today as compared with the chances of those born in 1900.

Social control is constantly at work equalizing the chances of survival by securing a few essentials of health to those least capable of commanding these for themselves. As in England any reader of the registrar general's reports may see, there has been a progressive smoothing out of the extreme variations in deathrates among the arbitrarily fixed five social—really economic and educational—classes of the population. While there has been no dropping of life expectancy among the most favored, there has been a progressive approximation of the status of the other four groups or classes upwards. Is it not a fair commentary upon the public application of preventive medicine that while all have reaped a benefit, the greatest improvements have occurred among those whose lives were formerly the briefest, most crowded with disease and its correlated handicaps, least adequate to permit of man's achieving the full measure of the potentialities of his inheritance? Look through the rates of our own cities and states and notice that there has often been a greater improvement among Negroes than among the whites, until it is seen that white rates, though still better than those of their colored fellow citizens, are closer to them than they were a generation ago.

A RATHER striking fact has recently appeared in the experience of New York with its largest modern urban Negro population, in that infant mortality rates in some of the areas where the colored people congregate are actually not only as low as that for the city as a whole but in certain areas are lower than for the whites in the same areas. Here we have a vivid experiment in the effect of persistent teaching of the ways of health to mothers eager to make and keep a family and a home. When nurses and doctors, in ways acceptable and understandable, reach those least favored in economic status or by the test of literacy, whether they be Negro or Porto Rican in New York City, Mexican or Japanese in Los Angeles, or foreign-born immigrants handicapped with Babel tongues, the result is the same, a quick saving of babies.

To question the worthwhileness of such work is to assume that you, or we, or anyone else in or out of government or science can wisely or even reasonably determine beforehand which of the babies saved a diarrheal death is more precious or less worthy than the rest. "In the modern metropolis only the powerful hand of the government can give the baby these things: pure food, wholesome milk, even sunshine, are the gifts of government and not of God."

It is not at present, at least in the temper of any of the Anglo-Saxon or Teutonic peoples, a question of whether we are fostering the unfit by wholesale methods of healing and health but how we can so control social factors as to raise to the level of tolerable humanity great masses and classes stalled in the march of industry by lack of power



"Here we have the coats of arms of the social experiment in health of the past half century"

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within themselves to enter upon the highway of prosperity.

Each man has a right to that "health and a day by which he will make the pomp of emperors ridiculous." Yet there are in every land, and probably today in greater actual numbers than ever before, men and women so paralyzed by the international confusion and dull lethargy of trade that they lack the chance to earn that little minimum upon which depend sturdy life and cleanliness, the begetting and rearing of families, the meeting and beating of disease.

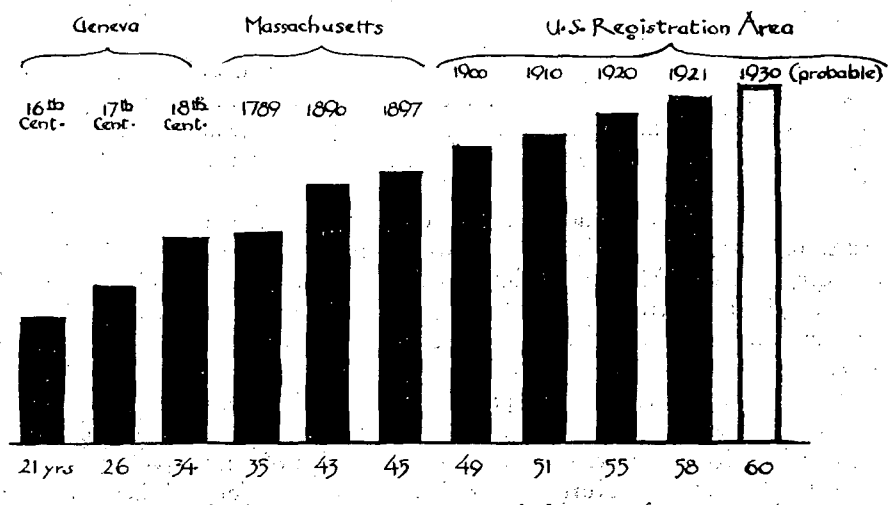
Social control has shown its power by snatching the city dweller from the grave, proving that deaths need not be more frequent than births and that even massed congregate existence is compatible with the highest level of personal hygiene and communal sanitation. The question which challenges chiefly others than physicians, sanitarians, nurses, dietitians and really calls for the sociologist and economist, educator, legislator and publicist, is whether individual permanent possession of land, the natural resources, the profits of production and sale, are compatible with such levelling upward of health fitness as we know is capable of accomplishment.

Will Russia give this answer? Have the cooperatives pointed the way? Will industry and commerce learn that something less than the most the traffic will bear in a day gives a greater base and future for progress than present methods of production alternating with prediction, surplus with depression? We have the coats of arms of the social experiment in health of the past half century. Shall we nail up in the next fifty a similar series of record for: dependency, delinquency, unemployment, overcrowding, child labor?

We have abandoned chance and adopted social control where we have a real faith in the exact knowledge of the natural history of preventable disease. Those to whom the control measures have been trusted, as in the charters or constitutions of cities and states under which our public health laws operate, have not betrayed their fellows, with rare exceptions; have been neither arbitrary nor tyrannical, in spite of the liberal authority granted to them, as court actions clearly prove. Can the other sciences, those of man and his property, machinery and its products, land and its harvests, develop a natural history, a body of trustworthy natural laws upon which a social control can be based to supplement the work of health control?

MAN has adjusted better against his enemies than to his successes. Industry and wealth are apparently responsible for no small part of some increasing deathrates, or shall we say that city existence with its mechanical and chemical triumphs has created dilemmas of body and mind of a variety not controllable except by individual as distinct from collective or social restraints? Cancer and diabetes continue with a formidable persistence to advance into the front rank of prevalence, not only relatively on account of the reduction of the commoner causes of death of earlier decades, but absolutely in their own right.

With causes still unexplained, so much is evident at least from British experience that cancer of the more common forms among men occurs with greater frequency the lower we go among the five so-called social classes. It is strongly suspected that the modern contact of man with the machine and the materials of production, and the determination of his habits of food and living by his pocket-book and the power of salesmanship, share in causing those many irritations of tissue upon which depends each development of the lawless cell growth we call cancer.



Expectation of life at birth. Changes of the past four centuries

Quite the opposite end of the social scale suffers the increase in diabetes. The well-to-do, the professional, those whose work requires the minimum of bodily exertion, whose lives are most successfully eased by the mechanics of locomotion and housekeeping, show diabetes deathrates already as high as those for tuberculosis in certain wealthy groups of our cities. We have been taught the lesson of abundant nutrition to provide good bodily resistance to tuberculosis so well that we are now in the main a nation of gluttons and wasters, taking in more fuel than we give our bodies excuse to consume in physical exertion, or for the production of body heat.

Preventive medicine devotes itself to detecting the presence, prevalence and causes of ill-adjustment of man to other living creatures, to his own fellows, to his chosen place of residence, his work and play. When we know the where, what, why, whom and how-many of a preventable disease, we need not worry about opposing the dogma of survival of the fittest, if we commit ourselves to the individual and collective application of those adjustments which permit man and his wife and their children to harvest life in the fullest measures of quantity and quality. In fostering the unfit, if that is what is charged, we are but cherishing those who have been handicapped, chiefly by maladjustments of our own creation, in confidence that each human being has something to contribute to the treasury of life if released from the ills which destroy the body and warp the spirit out of tune.

Scrapping the derelict automobile, ship or house is an American triumph of rational over traditional or emotional judgment which cannot be safely applied to the substance and spirit of man. The engineer sees a better bridge, tractor, sewage works *in posse* before he condemns the old to demolition while it still is useful. The Messiah does not live among us, certainly not among health officers, who can assure a mother that if she loses the babe now at her breast, the next one will be better; or that finer grandparents are just around the corner if only the present lot wouldn't so enjoy the full expectancy of life.

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Jeopards

By LEON WHIPPLE

THE design is to foreshorten evolution and to save the race from the waste and suffering of the animal struggle. We propose to plan both people and their environment. But the people are blind. Having come thus far by instinct, they are full of old dogmas, old fears, old superstitions. The castle we storm is very old and deep-rooted in Mother Earth. The high walls are those of the spirit: the trouble with helping the human race is its humanness. Henry Watterson once defined the word jeopardize—"to act like a jeopard." Our plan is jeopardized by the ineradicable tendency of people to act like jeopards. Therefore however precise our statistics, our measures of body or intelligence, our charts of genes, our division of duty between Nature and Nurture, the barriers to conscious progress are still the deadly sins. The plan for the regional betterment of human society needs to mark (as did old maps their *Terrae Incognitae*) certain ill-defined areas with ancient names:

Fear, Ignorance, Sloth, Lust, Gluttony, Pride, and *Envy.*

These are the old drives, once useful surely, now binding brakes upon the courage, sympathy and energy that any conscious plan demands. They are the very atmosphere of environment and the inner controls of people. They are the true universal inherited characters regardless of race, strata, sex or even mental stature. To breed them out of the race, to channel them by education, is the challenge of instinct to consciousness.

FEAR is the cardinal sin for social science. Fear was, I suppose, the bitter necessity for survival by instinct . . . fear of hunger, fear of death. These deep biological fears still threaten to whirl us back to chaos. We survived in packs or tribes; we are still afraid without our pack or tribe. Therefore our plans must consider war, race antagonism, class hatred. Fear is the great divider and our need is union. What price the end of fears?

This eternal threat of war cancels hope and numbs energy. We ask the parent, the physician, the teacher to spend themselves with ceaseless pains to nurture fine children—then we reap a whole generation with the sickle of war. The American nation has had a war about every twenty years, nicely spaced for the crop to ripen. Then we select the best for death and cut down those good stocks we need. How much did the World War cost the race in waste, in suffering, in retarded evolution? I happen never to have seen a social budget of the costs of 1914-18. Such a balance sheet needs to be included in our plan. Can we ask vision and self-control of plain people when this fear of war chills their hearts? "Better," John Median will say, "to seize the day to drink and be merry for tomorrow we die."

That science, moreover, on which we depend for amelioration each year hands over to fear a more efficient instrument of decimation. This fertile womb knows no eugenics, but bears twins blindly, one Aladdin and one Attila. Science has never bargained that her gifts be used for peace, not war. There is no peace society of scientists, I believe. Science is curiously unimpassioned about changing our environment and putting weapons into our hands. Once the gas or airplane or radio is begotten, duty is fulfilled. The politician and the manufacturer take the child to raise. Its environment is force and fear. The romancers make books about a general strike of scientists at the threat of war, but their habit is to volunteer as the heady drums go by and to make their laboratories into infernos.

But some are asking questions. Albert Einstein in California said:

> Why does this magnificent applied science which saves work and makes life easier, bring us so little happiness? In war it serves that we may poison and mutilate each other. In peace it has made our lives hurried and uncertain. It is not enough that you should understand about applied science in order that your work may increase man's blessings. Concern for the man himself and his fate must always form the chief interest of all technical endeavors.

It seems to me the biological and social sciences have a blunt question to ask and a bargain to strike with physical science. It must share the plan if only because the heritage of peace is what has made it possible. We cannot crown men for glorious conquests that we know will shear us off in a little while by super-efficient slaughter. We shall lose all heart for a knowledge that saves us to wipe us out.

THE social plan must comprehend the earth and the races thereof. Health, for example, demands world-wide sanitation. But races hate and torture each other; fear rules, and envy. If you raise your standard of life and control your population you invite barbarian invasion. Some sympathy, some understanding, some union of forces are needed before you can talk in the term—population. How are the self-controlled *and* the spawners to inherit the earth? Plan some time must face the problem of allotting the comfortable and fertile lands among whatever races and strains our measurements or ideals determine are the most beneficent for the progress we envisage. No sober mind can deny that this is the supreme question of politics. The League of Nations (which must be part of our plan) will live or die by that test, and now wisely keeps silence. We have yet no focus of equilibrium for the tensions of the seven sins. Can we teach Catholic Italy birth control or broadcast the surplus over the South American pampas? Yellow, brown, black, white—what are their gifts? How discovered? How to be mingled for the common good? Let them fight it out!

Then we are back at brute instinct. The survivors would be either the machine-makers (and so mass-killers) or the most fecund breeders with the lowest standards. No plan can consider that. Reconciliation seems impossible but it is not, for we already have evidences of softening moods. If we are too human, we *are* human and find ourselves in common peril. Art, science, economics, even the cinema and sports are weaving bonds, fragile as cobwebs. But we must have the patience of centuries; not sooner will races stop

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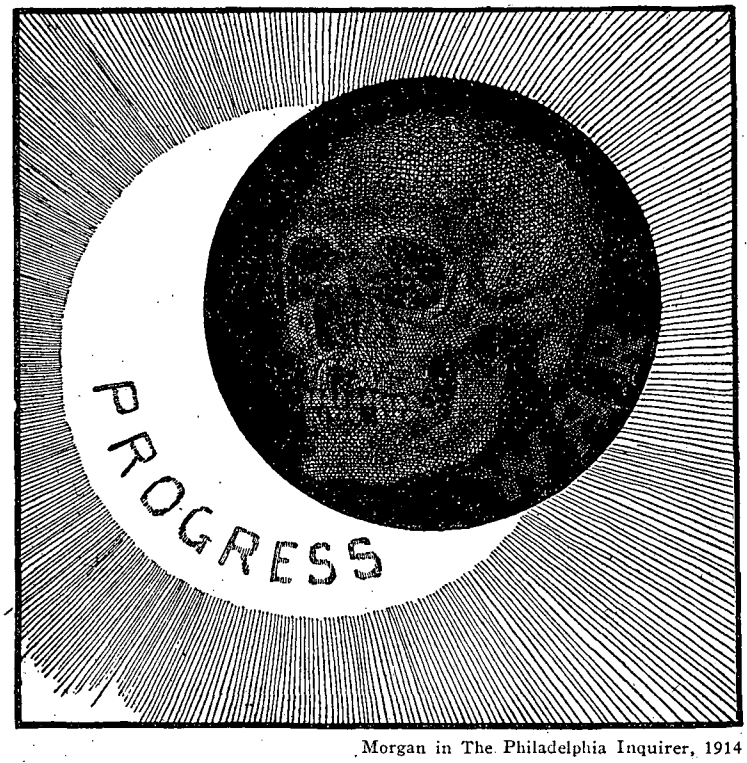
slaughtering each other to preserve their lives, their pride, yes, their strains we may need, their traditional culture we may borrow from. One does not conquer fear, ignorance, pride and envy overnight.

Fear sets class against class for the same deep reasons. Progress has been a kind of spinning of topsy-turvy classes: whatever the cost it seems to be the way we got here. But in any plan the parts must link and pull together, not apart. Social friction means waste and suffering even if evolution, too. We have indeed come farther along here than with war or race. Envy is more malleable than fear. Our success has been by abolishing more and more classes until we have left one final bitter struggle between privilege and under-privilege on the economic level. The plan must, I suppose, welcome that, since the aim is a good environment for all provided the ultimate all-class is not content with mere materialism. But it seems possible that we shall breed new modes for the seven sins. For we are set on aristocrats by the new tests. Will it be that envy may find the well-bred an object of hatred? The eugenic snob may be in dawning—another jeopard of the race.



Morgan in The Philadelphia Inquirer, 1914
The Eclipse

Russia may, as everywhere, prove the last clinic for our learning. In spite of scientific methodology the proletariat has not been a conservator of the classes that contribute to planning. The innovators, the students, the poets and dreamers have been dispossessed, for the time at least, of their leisure, their resources and all the intangibles that seem needful for brooding over the race. They have been discarded unless they contributed to the Communist program, and have no liberty to think pure thought independent of class utilitarianism. To put through one part of a plan class doctrinaires have been willing to cripple all other kinds of planning. After the silk shirts and the family car come to Russia what drive will keep the Five Year Plan from broadening into the Century Plan or the Eternal Plan? The losses for culture may not show up for a hundred years. Meantime it is interesting that they are borrowing, not money, but talents lost in the Revolution. The new rulers seems as ignorant of certain spiritual needs as the old were of more elemental ones. No, class hatred will not serve today. We shall rise or fall together.

Let us turn from the mass to John Median. He is slothful: that means he procrastinates. Yet the idea of plan demands both a will to take pains today and a long look beyond. The problem of time is crucial for a plan. Nature seemed to have all the time there was—enough for a thousand repeated failures or to wander down all the blind alleys. The race seems to have plenty of time; extinction by a new ice-age or gas from an errant comet need not worry us. But John Median has been just a momentary animal who relieved his transcience by the hope of eternity. He was not time-binding and so not plan-making, but muddled through and practiced *laissez-faire* very heartily. What are you going to do with a jeopard who will not have a health examination until too late, will not take out insurance, will not make a will? Now we are asking him to make a will every day, for that is what taking these pains means. Everyman has always agreed that "Sufficient unto the day is the evil thereof," for as a matter of fact it was. Now he is likely to add, "And sufficient unto tomorrow is tomorrow's good."

But the new social vision asks not only that we face the evils of today but all of tomorrow's, if not quite to the last syllable of recorded time at least for two long generations—our own and our children's. Nearly a century crushes down on us daily, asking a plan for our lives and our children's lives and our environment. We can no longer trust anything—even love—to instinct or to God or to the blessed vague compensations and restorations of immortality. It all has to be done in this life and all of this life met this week. This terrible incessant self-consciousness and time-sense threatens the sanity of both parents and social engineers. At this present moment of economic disaster, relief workers suffer from knowledge of urgent hunger and sickness, but they also dread a whole generation weakened by undernourishment and social toxins. The parent dare not kiss at random, to love or to be loved. The careless act may leave a psychic traumatism. For to care of the body the psychologist has added care of the spirit. This is too much to ask of a race endowed by Nature with sloth and procrastination and mild desires to believe *"Carpe diem."* Now it is *"Carpe vitam."*

Already the—shall we say?—euthenic parent shows signs of strain. Speaking as one, I submit that we risk getting either callous or neurotic. We are worn out, bewildered and numbed by the responsibility thrust upon us. We cannot even enjoy our children for the burden of our duty. We have overeaten of the fruit of the tree of knowledge, novel and dangerous gluttony. Everyday happiness is a thing in itself to be considered as well as the future: to lose this is to betray our parents, for did they not plan and sacrifice for *our* happiness? We are all somebody's children. I speak a word for the Here and Now.

We need to develop an ethics for the time-sense. It is a question of balance between duty to ourselves and duty to the race. Or perhaps to establish new social organs to which we can entrust part of the burden. We once did readily

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enough to the church and later to the school. Otherwise in another generation or two (and the new one is bent that way) we may find good people grown callous and ready for a short life if a merry one, and devil take the hindmost. Obstinate John Median may ask why he should trade the evils he knows for new evils to which he has not been disciplined.

The subsidence of a religious hope for peace and happiness hereafter has put a terrible premium on the present. If at the end of this little span we face extinction and silence, there comes a terrific urge to enjoy this fleeting present, to live as fast as possible, to squeeze life dry of pleasure and experience. Something of today's rush and hectic search for values comes from the sense that this is all we are to have. There is no second chance. To offset this hedonism we must learn the new faith of devotion to the races. So the creation of a religious faith seems one of the duties of those who plan. The emergence of many kinds of Humanism at the moment is a sign of a need.

IGNORANCE is a tremendous obstacle, but ignorance can be overcome. But one form of ignorance, distrust of the new, must be met with special concern. The democracy thinks it lives safest under a set of conventions that can be tested by immediate survival: it does not welcome the "sports" or innovators. So the plan must make ample provision for the preservation of civil liberty. Society must be taught to lift itself by its bootstraps: that is, to welcome new ideas before they can be proven good, indeed while they still seem dangerous. Otherwise we cannot foreshorten evolution or reduce waste and suffering. The truth has won, but at what a cost of martyrs and Dark Ages! Reasoned progress must find ways to avoid gladiatorial combats between contending creeds. The struggle for survival here must be softened as we hope it will be among peoples.

Lust, even in the high sense, is one of the walls. But here we are only questioners. For Nature it was the urge that assured a surplus for her ceaseless experiments. She had no sense of time and no sense of waste. We have both. But we must walk humbly. For it is conceivable that sloth and gluttony and fear might conquer lust. Birth control may prove so safe and comfortable that the vision of eugenics be dimmed and the race run the risk of self-control out of existence. The survival of the unfit is held a threat. What then would be the survival of nobody? That is fantastic, but reveals that here we deal with final facts and as yet know nothing but our dream. We can think only in terms of negatives and minima.

Such humility will discipline pride and that kind of dangerous pride—pride in the plan. Pride is a virtue for it drives upward. But there is the pride of new knowledge and the pride of theory. Great hopes and the beginning of achievement breed their own dangers. We are so thrilled and so eager and so unselfish that the threat of fanaticism is not to be forgotten. Social science may borrow a leaf from the book of physical science: it does not enforce its discoveries for the pride of the discoverer. There is ever room for the new vision. The personal equation is discounted; human error disciplined by tests. The layman bystander has no right to question the vision, the disinterestedness, the humility and patience of these social engineers. They are ennobled by their design, purified by their seeking. Already they have done enough to earn our gratitude. Above all others they are aware of the dangers and uncertainties of the great adventure.

But we have one right, John Median and I, for we are the material, we and our children. We have our small private hopes, our tiny parcel of life, our petty decisions. We are mounting into a plane with dual controls, old instinct at one, consciousness at the other. We can wisely ask:

"What is our destination?

"Have you a chart of the storms?

"Have you power for the journey?"

Nature has brought us thus far: her urges gave power that never failed. Can we safely exchange animal faith for conscious plan?

We have. Since the day of Dr. Malthus there has been no choice. The very question brings its courage. For the struggle and the drive of the old instincts flowered in this kind of intelligence. Nature seems to have been seeking this end all the time. The waste and the suffering were ways of teaching us some day to revolt and cure the waste and suffering. The plane with dual controls is in the air after the long run on the earth.

Our final concern is with power. Let us lay aside the old fears and count our blessings. We have courage—else we would not have this dream at all. Nor is this the courage of despair. Against ignorance we have tools of education and public information. This miraculous machine of publicity has never really been tried, though the drop in the deathrate hints at its concealed powers. We *can* give the people the facts. Against sloth we have leisure created by the machines sloth-invented, left-handedly. There will be more time for these urgent concerns of parents and teachers that now have to be done, so to speak, after hours. Nurture will be our business; and as we need more time the machine gives us more time—or will, if we are wise. Pride is good—if we are not purse-proud but person-proud. You can see the kind of pride we may find helpful already at work, fighting gluttony for beauty of body. Mayhap we shall get people dieting fat off their souls too. The proud parent may be even prouder of a well-born and nurtured child that measures well by the new standards. The modern parent is rewarded for pains and would not give up his thrills. So the old fears leave vestigial goods.

BUT knowledge and leisure and pride are not enough. We need something to inspire and move as did the old fears and the old hatreds. Modern social work and social thinking must construct the dynamics as well as the technic of social action that is constructive and forward-looking, based not merely on common peril but on common interest and concern. T. V. Smith said in his book, Chicago: "As the Chinese in the legend could not have roast pig until the house was burned down, so historically men have experienced the finest human thrill of apprehending a community only when it was in danger of dissolution by war, famine or insurrection." We are still seeking for William James's "moral equivalent of war." Peace has been enjoyed most by contrast; it meant comfort, quiet, relaxation, amusement. Now we ask that peace be enjoyed for its own lovely virtues, and at the price of only a little planning, foresight, self-control. We dare not think that price too strange for the human race to pay. Yet to make them forget the terrors of their exile, we must show them visions of the promised land and find drums and banners that will enlist them on this new crusade.

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If Only They Mean To!

By JOHN PALMER GAVIT

SOMETHING very wonderful and unexpected—it seemed quite impossible if not unthinkable; I have said myself that it was beyond even hope—nevertheless appears actually to have happened in India. As these words are written comes the announcement that the Mahatma Gandhi, leader and spokesman of rebellious millions, and Lord Irwin, viceroy of His Britannic Majesty's government in India, have come peacefully to terms. This despite the bitter and contemptuous opposition of the ultra-conservative elements among the British both in India and at home to any but brute-force response to the Indian agitation, and the dogged and occasionally violent resistance on the part of the ultra-radical elements in India against any compromise with "the oppressors." The temper of the one was perfectly typified in Winston Churchill's passionately contemptuous protest against any traffic whatever with the venerable Hindu saint; of the other by the ceaseless demand of India's fiery "young generation," mostly western-educated, for nothing less than complete independence.

From where I sit with such information as may be gleaned from early news dispatches, it looks as if Great Britain had surrendered almost every vital point. The profitable salt-monopoly, which Gandhi selected as his strategic point of attack, seems to have been virtually abandoned; the right to boycott British textiles in favor of the domestic hand-woven fabric of the loom in the home, seems to have been conceded. The 58,000 political prisoners, whose hordes have overwhelmed the machinery and accommodations of courts and even extemporized jails, are to be released unconditionally. It is difficult to discern anything important remaining of the old technique of British dominance in India. Short of ordering the British out bag and baggage, there would seem to be little else for Gandhi to demand, so far as the real essence of the situation goes.

Nevertheless, be its details what they may and even though it is on its face in the nature of a mere truce, the settlement is a great achievement of British diplomacy. Taken together with the results of the Round Table Conference in London in working out a practicable constitution always subject to the fact that it has still to be put legally into effect, it marks an era. It says goodbye forever to the old methods, the old psychology, ruling the relations between Great Britain and India ever since the beginning of their acquaintance and the bald rapine of the bad old days of the East India Company. It changes utterly the nature of the intercourse, intellectual, moral, economic, between the British government and commercial system and the vast population which has been in the past and now may become again, though on a profoundly altered footing, a great market for British products. It probably has saved India for a large and enlarging place as a willing member of the British Commonwealth of Nations.

There is still far to go and many a fool yet abides on both sides in position and with intent to "spill the beans" again. But the big thing is that into an impossible situation has come that catalyst whose tremendous power of solution mankind is so slow to realize—good-will, the intention to settle. Incidentally has been demonstrated the irresistible might of passive resistance on the part of a great mass of people united by common purpose; more terrible than an army with banners. Men and nations in the long run do what they mean to do.

HISTORY will regard this settlement and the era of peace which it probably portends as the great achievement of the present Labor Government of Great Britain. But not even the best-intending government there or elsewhere, can greatly alter the underlying psychological factors. There must be done away, and only time can do that, the racial arrogance that has long poisoned the relationships between the English as representing the white race and those of other origin and skin-pigment. This is what circumscribes the best efforts of that same government to untangle the different and even more difficult situation in Palestine. That requires not merely wise diplomacy but something in the nature of magic, because no fine and friendly words, no well-intending negotiation can blink or blot the desperate fact that representatives of Great Britain made mutually contradictory promises to the Jews and to the Arabs in and about Palestine. The concessions and compromises there have to be made not by Great Britain but by the two elements each of which has title not only quasi-legal but rooted in emotion, sentiment, racial pride.

There is the conflict, not between right and wrong, but between two rights; the essence of tragedy. And into it is being injected that poison which embitters the fate of Jewry all over the world—traditional prejudice against Jews as such. Right now there is spreading among the Arabs a revival of that vicious, cruel, groundless superstition about "ritual murder"; the fiction that Jews use the blood of children in religious ceremonies. An Arab newspaper in Jerusalem published it again in connection with an alleged kidnapping, starting a fire of fear and hate that it will be hard to stamp out.

However there is almost equal bitterness of a religious character between the Hindus and Mohammedans in India. The spirit of conciliation which Great Britain has exemplified in the one perplexing situation may have its healing effect likewise in the other. Again it is a question of intention. If Great Britain means to have peace in Palestine and means it hard enough she will pacify even that intricate conflict. Remember what happened in Mexico, where inept and mischievous folk had been brewing war-medicine for decades—one quiet, friendly, common-sense Morrow changed the temper overnight.

THE same is true in the wider fields. The world does not yet mean to have peace. Let be done what will about armaments, it will be idle without the will to pacify. Smouldering, sputtering in the heart of the world's powder now is the system of distribution of war-tribute, impoverishing countless thousands, benefitting nobody—not even the United States to which the bulk of it eventually comes. William Philip Simms, the uncommonly well-informed and rational foreign editor for the Scripps-Howard newspapers, recently set forth a program charged with the kind of common-sense with which we credit ourselves but which we have but scantily demonstrated. He urges our adoption of and leadership in it as the only way in which we can make real our service to world-stability. Assuming, of course, first our entry into the World Court, where we are long overdue, he would effectuate the Kellogg Peace Pact by providing definitely for international consultation upon any threat of war, and international boycott and embargo against any war-making states. Reduction of all forms of military and naval armament he of course takes (*Continued on page* 64)

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Wells on Life

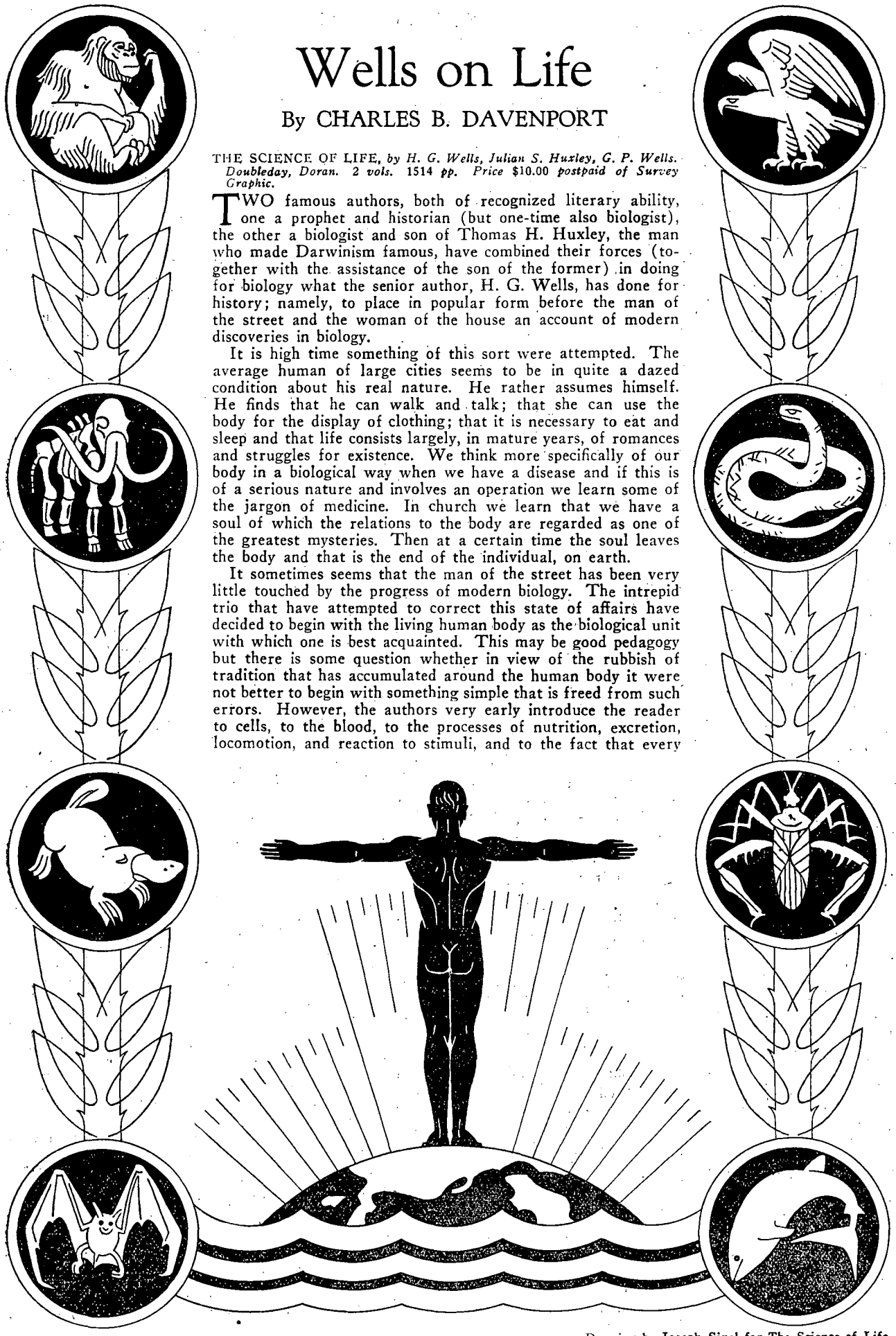
By CHARLES B. DAVENPORT

THE SCIENCE OF LIFE, *by H. G. Wells, Julian S. Huxley, G. P. Wells. Doubleday, Doran. 2 vols. 1514 pp. Price $10.00 postpaid of Survey Graphic.*

TWO famous authors, both of recognized literary ability, one a prophet and historian (but one-time also biologist), the other a biologist and son of Thomas H. Huxley, the man who made Darwinism famous, have combined their forces (together with the assistance of the son of the former) in doing for biology what the senior author, H. G. Wells, has done for history; namely, to place in popular form before the man of the street and the woman of the house an account of modern discoveries in biology.

It is high time something of this sort were attempted. The average human of large cities seems to be in quite a dazed condition about his real nature. He rather assumes himself. He finds that he can walk and talk; that she can use the body for the display of clothing; that it is necessary to eat and sleep and that life consists largely, in mature years, of romances and struggles for existence. We think more specifically of our body in a biological way when we have a disease and if this is of a serious nature and involves an operation we learn some of the jargon of medicine. In church we learn that we have a soul of which the relations to the body are regarded as one of the greatest mysteries. Then at a certain time the soul leaves the body and that is the end of the individual, on earth.

It sometimes seems that the man of the street has been very little touched by the progress of modern biology. The intrepid trio that have attempted to correct this state of affairs have decided to begin with the living human body as the biological unit with which one is best acquainted. This may be good pedagogy but there is some question whether in view of the rubbish of tradition that has accumulated around the human body it were not better to begin with something simple that is freed from such errors. However, the authors very early introduce the reader to cells, to the blood, to the processes of nutrition, excretion, locomotion, and reaction to stimuli, and to the fact that every



Drawing by Joseph Sinel for The Science of Life

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one of his traits started in the microscopic fertilized egg and proceeded in its development through certain internal impulses which are different for each individual and consequently lead to a different end result in each.

Having thus tried to remove some of the debris of misconception that has encased the human body the authors take up the other animals, passing in review the branches of the backboned animals, of the animals with an exoskeleton, of other animals; of plants, and even of the very lowest organisms, including the amoeba and bacteria.

The third, fourth and fifth parts of the first volume deal with evolution. There is a good heading to part three, The Incontrovertible Fact of Evolution. It is time we stopped calling evolution a theory in the same way that we have stopped calling the fact that the planets revolve around the sun the Copernican theory. Every new discovery, no matter how varied or minute, simply fits into the great fact of organic evolution. The authors naturally cite the evidence from the rocks, the evidence from development, the evidence from the variation of organisms that is going on before the eyes of those who look for it, the changes in the distribution of living things. The evolution of man as the most complicated of the primates is considered and some account is given of that remarkable series of fossil man and human precursors which have supplied abundantly the "missing links" that were sought fifty years ago.

THE fourth part deals with the how and why of development and evolution. There are several sections here on genetics, the youngest of the biological sciences, which has to do with the way in which the course of development of the individual is directed and the way in which the directors of development, or genes, are distributed in the germ cells out of which the next generation is to arise. This part gives the opportunity for the reader to get acquainted with the chromosomes, so fateful for our children—so little known, though familiar to biologists for thirty years and more. There is a chapter here on the determination of sex which should set at rest the promoters of the three hundred odd theories of sex that have no basis, excepting the imaginations of their authors and their inadequate statistics. In other chapters we were introduced to mutation or evolutionary variation; also to selection and to some of the theories which have been adduced to account for the process of evolution. The fifth part goes with more detail into the history of life upon the earth.

The remainder of the book stresses environment. The sixth part deals with ecology, or the interrelations between organisms and the various niches of the environment in which they dwell. The seventh part deals with health and disease, including the consideration of microbes, immunity, vitamins, sunlight and the leading causes of death. The eighth part has to do with psychology, not of man merely but of animals in general. Finally a chapter discusses a variety of matters of interest to mankind, such as religion, war, overpopulation, birth control and improving the quality of the race, or eugenics.

The book impresses one as a very successful product of a great conception and a stupendous effort. To comprise in a single work vast fields of human biology, of organic life, of the causes of evolution and processes of evolution and development, of organisms in relation to environment, and to disease and sanitation, of human and comparative psychology and of practical applications of biological research to human affairs is an outstanding achievement.

The subject matter is presented in such fashion as to be easily understood by the reader who has had a highschool education and has been there introduced to some of the principles of biology. Perhaps the assumption that the highschool includes some biology is not, in general, warranted; since even in our large cities biology has often had to struggle for its place against the oustings of civics and economics. Perhaps this very book will play a role in reinstating biology into a dignified position. The authors do not treat the subject, however, in compact text-book style but more in narrative fashion. They do not hesitate to bring in detailed stories of interest, even though, by so doing, they upset the principle of due proportion. For example, in discussing the limitation of time and space we have two pages devoted to the Mount Everest expedition and to balloon ascensions to great heights. All of this is good technique, for the mind cannot feed constantly on concentrated mental pabulum and the anecdotes afford something of a relief to didactics.

As to the scientific accuracy of the book there is little difficulty to be found. The authors are well informed and have had access to proper sources of information. The different professional biologists who read the work will, however, no doubt find sections, perhaps their own sections, inadequately treated. There are parts which might have been written by the grandfather of one of the authors, about as they stand in the book, ignoring certain important advances that have been made in the last fifty years. A geneticist might object that the authors are somewhat narrow in insisting that heredity is, with trivial exceptions, Mendelian, oblivious to the new knowledge that we are acquiring of the role of fragmentation of the chromosomes in producing non-Mendelian results. Also in referring to the effort of x-rays in inducing mutations the authors err in stating that the mutations are sometimes altogether new. Muller, at least, finds that they are only of the kinds that arise outside of exposure to the x-ray machine. So the different specialists in contact with a group of newly emerging facts might find the work inadequate in spots. Indeed, were the book in every respect adequate at the time of publication in February 1931, it would already be inadequate in spots by February 1932, so rapid is discovery in the different fields of biology.

The book is attractively published and is abundantly illustrated. The illustrations are, in part, diagrams—some of them quite novel in conception and highly informative. Some of them reproduce organic forms inaccurately. Some of the figures are not very well printed, even if they were carefully drawn. Perhaps it was intended to give general impressions rather than analytical reproduction of the organic forms in all of their detail. The trained biologist struggles ever for clearness and analysis in his drawings and is, no doubt, disappointed with illustrations of which the outlines are blurred by too much printers' ink. However, one cannot fail to recognize that most of the figures are satisfactory.

In conclusion one can only express again one's appreciation of the great work so well done, one's hope that the book will become as popularly known as Wells' Outline of History, and one's anticipation that it may serve to create a clientele for the biologist that will be kindly disposed toward the discoveries which he makes and receptive of what is definitely ascertained whether or not it is in accord with their preconceptions.

Mixed-Bloods in Society

RACE MIXTURE, *by Edward B. Reuter. McGraw-Hill. 224 pp. Price $2.50 postpaid of Survey Graphic.*

IN human relations no phenomenon is so little understood, no issue so dogmatically debated as the facts and results of race intermixture. Many have despaired of any truth or profit ever coming from further discussion however fair the motive or competent the science. Yet here we have a study of racial intermarriage and miscegenation which succeeds in being objectively scientific and reaching sanely practical conclusions.

We do not wish to rob Professor Reuter of fullest credit for this feat of "squaring the sociological circle," but with all the scientific exhaustiveness and objectivity in the world, no such unexpected result could have been reached except through a radical change from the older point of view. Mr. Reuter insists flatly and rightly "that racial problems are sociological rather than biological," thus bravely turning his back on the approach of nine out of every ten discussions of race mixture, including a previous study of his own. There are differences between the hybrid and the more or less pure stocks which have produced them by interbreeding; but these differences are largely the outcome of differential social treatment and so products of the social environment. The same amount and degree of intermixture will produce radically different results wherever the attitudes of the culturally dominant groups differ, as they so often do, and where the counter-attitudes of the other two groups are, accordingly, reactions to different social situations and attitudes. And so although the specific conclusions of this treatise may be tentative or even in one or two cases questionable, a basic new scientific approach to this most debatable of all social questions has been carefully laid down and in the reviewer's judgment brilliantly vindicated.

Naturally the evidence and the argument turn on the mulatto

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group in America and the attitudes of the white and the Negro groups. But the problem is given world perspective as but an extreme case of a perennial and universal social phenomenon. Presumably the conclusions, with some slight transposition, are to be taken as universally applicable. Admitting that "at the present time mixed-bloods occupy a somewhat superior status," Reuter explains this largely on the basis "that these mixed-bloods have the advantage of a wider biological inheritance, better education and usually a more secure economic position," combined with a prestige conceded even by the prejudice of the dominant stock.

This opinion of the mulatto as a half-way type is a phase and variation of the general doctrine of racial superiority which has been apparently a cherished myth of every human group able to observe physical or cultural differences between themselves and their neighbors. At present all sound scholarship . . . assumes an essential equality in the native mentality of racial groups . . . and the present popular recrudescence of primitive ethnocentrism is to be understood as an inevitable protest of entrenched privilege against the democratic drift of the modern world. . . . From the known facts there appears to be no sufficient evidence to justify a belief that the mixed-blood populations as a whole are descended from mentally superior persons or groups. . . . The chief explanation of hybrid superiority must be found in social rather than in biological facts.

Relative degree of isolation, occupational differentiation, differential treatment, especially conditioned by the "rational and sentimental judgment of the whites," increased culture contacts and personal mobility are the chief factors, then, of a mulatto superiority which is primarily the "result of a differential treatment determined by the biological fact," but which is "thus not an evidence of superior ability but of a reasonable measure of superior opportunity". . . "However, there is no longer the same general assumption of mulatto superiority," and "this change in the Negro's attitude toward himself removes one advantage historically enjoyed by the mixed-bloods."

The study includes a suggestive but by no means final analysis of the characteristic psychology of the mixed-blood as reaction to his seriously conflicting loyalties and their consequent dilemmas. This is a book all students of the American race question should read.

ALAIN LOCKE
Howard University

Lost Wages and Lost People

CASE STUDIES OF UNEMPLOYMENT: *Compiled by the Unemployment Committee of the National Federation of Settlements, with an introduction by Helen Hall. Edited by Marion Elderton. University of Pennsylvania Press. Price $3 postpaid of The Survey.*

THE settlements of the country offer for inspection the makeshift payroll of the unemployed—intimate, loose-leaf records of what families turn in, humanly speaking, to take the place of lost wages.

Something is seriously at fault with more than the bindings of American industry when blotted, inverted accounts like these drop out of its ledgers. We could not bear to have happen to those near to us what is set down of these men, women and children. Collectively we let them pass. Yet nothing could be clearer than that neither the workings of a divine providence nor the things which they have individually done or left undone, are at the bottom of their discomfiture. The industrial arrangements which form the setting of these 150 case stories are distinctly of modern and human contrivance, subject to change and control. And by gathering evidence when production was in full swing, by singling out families dislodged through no fault of their own, by drawing them from all sorts of occupations and a wide range of industries, the Committee on Unemployment of the National Federation of Settlements has made an original and clarifying contribution to straight seeing on the subject. No such body of concrete cases, lifted from the industrial life of America the country over, has hitherto been available. They make up a source-book and students of every facet of the complex problem will be indebted to these widespread observation posts; and to the Industrial Research Department, Wharton School of Finance and Commerce, University of Pennsylvania, which has brought out the volume.

This then is the neighborhood's charge to industry. In intro-

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ducing these neighbors, Miss Hall has the gift of making us feel deeply with them as well as for them. She understands, and shares her insight with us. And it is a healthy development that such a charge should come from a quarter so aware as the settlement houses of the "run of life in our industrial districts." These are films of our swift moving American business caravan and its trail of household wreckage. Clinch Calkins has made an intriguing pageant of it in her book, Some Folks Won't Work.[1] In this later volume these case stories of family vicissitudes—preventable misfortunes—stand out like a train of covered wagons.

What we confront is a practical problem of broken work and broken earnings. It simmers down to the question of an everyday living to cover living every day:

We must make work steadier and more secure.
We must make reemployment swifter when men and women are laid off.
We must insure against want the families of breadwinners who seek work and cannot find it.

Sincerely prosecuted, those three lines of action put forward by the settlements would not solve the problem of unemployment or outflank its great causes. But they would cut down its bulk in good times and bad, and they would bring an orderly easement to wage-earning households which now bear the brunt of this recurring and measurable risk over which they have no control.

PAUL U. KELLOGG

A Soviet Statesman's Yearbook

THE SOVIETS IN WORLD AFFAIRS, *by Louis Fischer. Jonathan Cape and Harrison Smith. 836 pp. Price* $10.00 *postpaid of Survey Graphic.*

THIS comprehensive political history of relations between the Soviet Union and the rest of the world by the correspondent of The Nation long resident in Moscow is in itself almost an historical event. Greatly exceeding in scope, it far surpasses in importance and in wealth of citation and cross-reference the earlier compilation of Russian-American Relations, by Cumming and Pettit (1920), and Prof. Schumann's courageous volume, American Policy Towards Russia Since 1917 (1928). It is, in fact, an encyclopaedic cross-section of the sordid international history of the western world since the naïve entry of the United States into the welter of imperialist intrigue and political buccaneering which was the World War, as viewed from the ruddy walls of beleaguered Moscow and interpreted by Russian eyes. Some of its interpretations will probably be challenged as one-sided, unconvincing, or sophistical. But these volumes will stand for years as a monument of journalistic research and as the most complete and objective source-book in English on Soviet Russia's far-flung international relations.

As such the work offers a much-needed corrective to the conventional official and academic diet of fatuous phraseology that passes for modern history. Considering that Soviet foreign policy is "largely a function of Soviet internal conditions and of Bolshevik principles," the author has traced the ebb and flow of international intrigue emanating from London, Paris, Rome, and Tokio—Moscow's own contributions to the tragic play being significantly soft-pedalled—which have involved a dozen bloody wars on the territory of the former Russian Empire for "the defense of the Revolution," assuming always that the Bolshevik version, or perversion, of that long-expected and devoutly desired event is the 100 per cent pure and inevitable historic fact from which all else must take its cue.

The chapters on the Allied and American intervention in Russia in the last year of the War are replete with sinister detail of cross-purposes and misunderstanding. They serve to throw a lurid light on men and motives, officially honorable; and to illustrate anew that fatal irony of historic circumstance by which America's entrance into the War at the hour the Russian people had resolved to repudiate it served but to prolong its agony, and the fact that the fateful decision to inflict a "knock-out blow" upon Germany in the West occasioned the survival of Bolshevism in the East, feeding on the frenetic illusion of a general European proletarian revolution.

The more than eight hundred pages of this work are replete with details of international intrigue, charges, revelations of

[1] Harcourt Brace & Co., now in its third edition.

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Scientific Book Club Review

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This book consists of a series of studies—each complete in itself—and each presenting a significant aspect of racial contact and intermixture, such as the legal status of racial intermarriage, the relation between color and achievement, the changing status of the mulatto and his relative superiority or inferiority to those of unmixed blood. Special emphasis is placed on the relation between whites and negroes in North America and the problem of the hybrid is discussed thoughtfully and without prejudice.

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important episodes of recent political history which it is impossible even to mention in the space of this review. In addition to the "inside" story of the Chinese Revolution, told to the author by Karakhan and other Soviet emissaries playing stellar roles in it, there are extracts from the private papers of Rakovsky and Litvinof, and an astonishing statement to the effect that Lenin agreed with Raymond Robins that American private property would be exempt from the terms of the hasty decrees of national confiscation (June, 1918), at the time of the supplementary Brest-Litovsk negotiations with Germany. "Legally, therefore," says Fischer (p. 563), "American property is in a different category from that of other foreigners." If this be true (we had thought that the principal decrees of nationalization affecting American property were dated *December,* 1918) and corroborated, the fact is of capital importance in the diplomatic negotiations with Moscow which must ultimately be faced, if only to be a process of "face-saving," on both sides. If eventually, why not now? It is becoming humorous not to recognize the existence of the most dynamic and dangerous organization of power and mechanized-mesmerized humanity since the moving masses of Tamerlane.

Cleveland, Ohio BRENT DOW ALLINSON

Functions of the State

THE AMERICAN LEVIATHAN, *by Charles A. and William Beard. Macmillan. 798 pp. Price $5.00 postpaid of Survey Graphic.*

THE title of this book is drawn from the seventeenth century work of Hobbes, but the contents is distinctly and characteristically twentieth century. For while Hobbes in investigating the nature and functions of the state in his day was led to investigate the relation of psychology, ethics, and theology to politics, the Beards, father and son, are content to assume the existence and necessity of the modern state. The sub-title they have chosen, The Republic in the Machine Age, reveals what they are dealing with, namely, the government and its relation to the technology of the modern society. The first half of the book therefore deals in a very readable interpretative manner with the structure and functioning of the political institutions of this country—an account very similar to that in the first part of Beard's American Government and Politics. The second part, however, is devoted to an interesting exposition of what the government does, how it promotes commerce, industry, agriculture through technical advice and investigation, how it develops natural resources and maintains public health, and so on. The last hundred pages give a survey of administration and functioning in the territorial empire, foreign relations, and war powers. There are numerous photographs illustrating government activities. A good bibliography of works of reference is provided for each subject.

Rutgers Universty H. MCD. CLOKIE

Leaven of '48

PILGRIMS OF '48, *by Josephine Goldmark. Yale University Press. 311 pp. Price $4.00 postpaid of Survey Graphic.*

MORE fascinating than most historical fiction is this true story of a group of Americans. Unpretentious as scientific research, it carries complete conviction. A great movement is reflected in the fortunes of a few interrelated families. Only just enough background permits each detail of biography to fall into a significant pattern. A whole period, a whole phase in our national becoming is thus made alive. This achievement, rare as it is delightful, may be attributed in part to the simplicity with which the author, instead of seeking for some new formula of integrating personal and public experiences, has left them intermingled as they are in real life—which does not reserve separate chapters for the sublime moments of a career apart from the humble, and at times a little ludicrous, concerns of every day. Thus the main characters of this book are brought near to us in such a way that we can recognize their strength and beauty without a sense of strangeness.

Pilgrims they were indeed. The title reminds that the same forces and types of personality to which this country owes its origin have occurred again and again to enrich and rejuvenate the spirit of our people. The descendants of pilgrims and of revolutionaries do not escape the influences that make for com-

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placency. There is little left in America of the idealism which in the nineteenth century was brought by the refugees from unsuccessful uprisings against tyranny in central Europe and Italy. These chronicles of three pilgrim families are near enough our own time to keep alive dimming memories and lessen our fall from the heights of our own past as a nation.

We are told sometimes that liberalism will no longer do, that a more constructive and technically informed political philosophy is needed to overcome modern evils in state and society. This book shows that even in '48 liberalism divorced from the realities of economic need did not suffice, so that the romantic ardor of students and middle-class nationalists was swept aside by the rush with which great masses of the poor and the oppressed broke through the basic restraints of the social system. Though steeped in the writings of the socialists, the young liberals of those days were lost in this new conflict between poverty and wealth. Yet these liberal hopes were in part transplanted to our own coast and flowed over the broad prairies and to the West.

The temper of '48 did not die out. It flourished in the abolition movement and in every movement for political liberty. To this day it has continued to sense new tasks and to inspire reforms. One special value of Miss Goldmark's book is that it helps us to see in the center of one small part of the stream of American history that faith in democracy which again and again has made itself felt at critical moments to rekindle the failing idealism of a prosperous people. BRUNO LASKER

The Inquiry

It Murmurs of the Sea

THE DEEPENING STREAM, *by Dorothy Canfield. Harcourt, Brace.* 393 *pp. Price* $2.00 *postpaid of Survey Graphic.*

A wanderer is man from his birth.
He was born in a ship
On the breast of the river of time.

THROUGHOUT Dorothy Canfield's Deepening Stream, so well and satisfyingly named, a lover of Matthew Arnold will be constantly reminded of this poem on life and time. Dorothy Canfield has written under the same awareness of eternal values. Matey Gilbert, even more than Marie Neal in The Brimming Cup, walks along through her life in two worlds at once; and toward the end of the novel when the old Quaker, her father-in-law, has taught her to penetrate her own thought, she is becoming aware that these two worlds, though outwardly hostile, are inwardly harmonious.

Matey was one of the children of a marriage which, though made for love, was far from happy. The half-masked jealousy and vanity of her brilliant father and the unavailing self-assertion of her mother filled the children's hours at home with embarrassment and uneasiness. The shadow of it lies on Matey's whole time of youth and causes her habitually to distrust life.

But still more finely true is the slow accidental revealment to her, through long years, of the complicated causes which had led her father and mother into such unhappiness. The stream of her life, deepening in many ways at once perpetually deepens in sympathy and understanding of her own parents.

From the sarcasms and rivalries of the home atmosphere, meanwhile Matey escapes to school—a dull one—and to hours of extraordinarily wild and joyful play, an impassioned immersion in outdoor games, the description of which constitutes the most brilliant chapter in the book. The antithesis which follows, between the American view of childhood pleasure as an important end in itself and the French view of childhood as a priceless chance to prepare laboriously for an intellectually and spiritually rich grown-up life—this very interesting antithesis introduces us to a French family who play large individual parts in the novel, besides often acting as a chorus. These Vinets reverse the American question on Matey's marriage. The American question has been, "Do you think he will make you happy?" The old Frenchwoman asks, "Mété! Do you think you can make him happy?"

When Matey marries her sober lover, the young bank cashier who had once hoped to paint, she is still very suspicious of life, as a Greek bearing gifts. She wakes up only gradually to feel how happy she is. How rare, in novels as in poetry, is happi-

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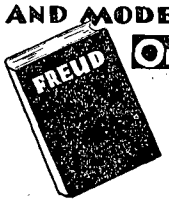

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ness, how very rare a gradual happiness! Strange how infinitely more difficult to describe is slowly rising joy, than slowly darkening sorrow and doom! Matey's gradual rise into joyful living is well described, and I suppose will cause a number of modest persons to wonder how it ever happened that their untheatrical kind of life came to be regarded as material for a novelist.

A deep and gracious domestic life, absorbed in itself, is cut into by the War. What the hero and heroine do in the novel is what Mrs. Fisher and her own family did between 1916 and 1920. There are some memorable pictures: one of the apathetic wounded prisoners who had lost all taste of life; one, drawn from memory, of the heartrending enthusiasm for Wilson, as he drove, self-contained and narrowly smiling, through the weeping applause of the crowds. Longest perhaps of anything in this book—Dorothy Canfield's widest and deepest book—we shall remember what the bereaved French widow, in her meager apartment, thought of Wilson.

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As the stars come out, and the night-wind
Brings up the stream
Murmurs and scents of the . . . sea.

Poughkeepsie, N. Y. SARAH N. CLEGHORN

The Drama of Jesus

THE MASTER: A LIFE OF JESUS CHRIST, *by Walter Russell Bowie. Scribner's. 331 pp. Price $1.00 postpaid of Survey Graphic.*

TWO years ago, the first edition of this book came off the press as a selection of the Religious Book Club. It was a good selection. It swept quickly into the ranks of religious best sellers. In the dollar reprint it is exactly the same fine book, now available to new thousands.

There is something deeply fascinating about writing the life of Jesus of Nazareth. It began, of course with those oral traditions which formed the basis and background of the first Gospels. And then, as each of the Gospel writers took up the task of compiling his book, he selected for his own use such material as most appealed to him. The question of his own point of view was naturally just as important as the question of the precise facts in the matter. He selected his material with a view to supporting his own ideas about the person and words and works of Jesus. Was there ever such a town as Cana of Galilee? There is no reference to it except in John's Gospel. And the same might be said of "Elim, nigh to Salem" and several other cities and towns which John mentions. The geographical, historical and statistical elements were quite secondary; the important thing was to present Jesus as the writer thought of him.

Exactly the same thing might be said with equal weight of Jesus' modern biographers. Barton, a business man, sees Jesus as a go-getter. Case, a research professor, sees Jesus as entirely the product of his background. And so on, through Papini and Renan and Klausner. Bowie is a dramatist, author of some of today's best known and loved religions dramas and pageants. His life of Jesus is one long drama, its climaxes and denouements as inevitable as though they followed a scenario. Bowie is an Episcopalian rector; he sees Jesus with the eyes of a dignified mystic. And Bowie is a student; so he presents Jesus against a scholar's understanding of the life and times of the first century. If he omits some of the truth that was in Barton and Case and Klausner, the fault is inevitable. Nobody but another Jesus could properly write a life of Jesus which would omit nothing. Not even the four evangelists did that.

Colorado Springs, Colorado CHARLES STAFFORD BROWN

The Muck-Raking Age

OUR TIMES: PRE-WAR AMERICA, *by Mark Sullivan. Scribner's. 563 pp. Price $5.00 postpaid of Survey Graphic.*

"TO the historian some songs constitute an index to manners, vogues, even morals, the events and subjects that engaged national interest, the times of economic, philologic, and other

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changes." Thus Sullivan explains the inclusion of his chapter on the popular songs of pre-War America; but had he substituted the word, "public attentions" for "songs" and placed the sentence at the beginning of his work, he could not have possibly found a more astute and concise preface. For behind the enchantment of Sullivan's parade of the songs, news, scandals, and characters of a quarter of a century ago, is a vivid revelation of the mind of America.

The third volume of Our Times has Roosevelt as the central figure. It was the time when we first realized that we had found ourselves and that our course was set toward power in industrial development. The vast organizations of big business were presenting the most serious difficulties of administration that the government had faced since 1860. As with every flush of new power in the rise of American industry, abuse flourished at every corner. With a master publicist in the White House who never passed an opportunity of using the press to further his purposes, the press entered a heyday such as it never has experienced before or since. The land was thrown into a succession of frenzies; the insurance scandals, the startling charges which arose over the innocent head of Archbishop Ireland, the simplified spelling controversy which reached international proportions, and countless wranglings over the ramifications and innuendoes of business and political intrigue. Out of the riot arose a definite "literature of exposure" which the author correctly assigns to "a fairly important place in the politics and letters of the early part of this century."

Our Times holds all the fascination of an old newspaper file—for the most part made up of front pages—leafed through, revealing ourselves as we were only a quarter of a century ago. It is not an altogether flattering picture with its abuse of power and trust, the much-raking of sordidness and sensation and its directing of national destinies with ballyhoo. Sullivan, as the historian, is not concerned with the reflection his document casts; he includes no speculation on destinies or importances; his only guide to inclusions and exclusions has been the amount of attention that the humor of the day allotted to events as they were encountered.

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RELIGIONS OF THE WORLD, *by Carl Clemen and others. Trans. by A. K. Dallas. Harcourt, Brace. 482 pp. Price $4.50 postpaid of Survey Graphic.*

THIS is a scholarly German work, heavy and hard to read, full of information if anybody wants it, and redeemed from being completely anaesthetic by a profusion of excellent and unfamiliar illustrations. Destined to be a standard reference work read by those who are more interested in what religion has been than in what it may become. The paper, binding, and type are excellent. Now if the text could have been enlivened by the sort of treatment which Frazier would have given it. . . .

NORTHCLIFFE, *by Hamilton Fyfe. Macmillan. 357 pp. Price $4.00 postpaid of Survey Graphic.*

AN INTIMATE biography indeed, by friend and colleague, and so a warm portrait of the charming person, not an appraisal of the force that remade English journalism and tinkered with the British Empire. Very readable if o'er-soft with admiration. Alfred Harmsworth, who boosted automobiles and airplanes, invented news stunts, sensed the popular audience, steered American opinion toward the Allies, belabored inert ministers and broadcast disintegrating propaganda, is well sketched, but Northcliffe the stark will with mind and morals and genius, needs a colder science to reveal either his meaning or his greatness.

THE LIVES OF A BENGAL LANCER, *by F. Yeats-Brown. Viking Press. 299 pp. $2.75 postpaid of Survey Graphic.*

SWAN-SONG, and delightful, of a vanishing caste, the overseas Englishmen who have been "colonizers and traders, not wet nurses." Bengal Lancer was the fine fruit of an English public school, an earnest young soldier who froze or burned with the Army over India and Afghanistan but never left behind his polo ponies and his bulldogs—an officer who got along with all conditions of men from commandant with tropical liver to the

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Pathan warriors of his troop—legionniare so specialized in the Indian Army that he was given little to do in France but by sheer luck of red tape was put in an airplane over the Near East, where he was captured by Arabs and imprisoned foully by Turks. The high pitch of his story is the description of pig-sticking, a bloody business where a man is cut to the bone by a flick of a tusk as a wounded boar charges out of the brush, treading his own bowels. Lancer (like his kind) is more vocal about horses and dogs than about men; women scarcely come in—a hazy American with whom he danced and some incidental nautch-girls. At end he turns with deep spiritual excitement to the Yoga. A grand man's-book, written in lean fit English that delights both eve and ear.

THIS THING CALLED BROADCASTING, *by Alfred N. Goldsmith and Austin C. Lescarboura. Henry Holt. 362 pp. Price $3.50 postpaid of Survey Graphic.*

RAMBLING and windy, this book nevertheless will help executives in social work and business who use the radio or want to. Chapters on Radio, The Art, Building Radio Programs, The Announcer and His Role (or what is a good radio voice and why women aren't announcers), Radio and Education, Radio and Voters contain useful information. Others give a basis for understanding the intricacies of networks and their relations to local stations, the difference between sponsored and sustaining features, and the magnitude of radio undertakings, costs and possibilities. The fact parts are better than the efforts to prove specific accomplishments to date.

A SELF-CONTROLLED POPULATION

(*Continued from page* 33)

values affected by the quantity of population that suggest themselves, and have in fact been mentioned. The complete larithmic goal will be a composite of them all.

For the present, the main thing is to recognize that the day of an intelligent control of population growth by society itself has already dawned and will grow rapidly brighter. For the present, the direction of control indicated in most societies is downward. But that need not necessarily remain so. And when the required social attitudes and techniques have been developed they can be used one way as well as the other. Society has a tremendous capacity to get its individual members to do what the group wants.

IF ONLY THEY MEAN TO!

(*Continued from page* 55)

for granted as a by-product ensuing automatically from the assurance of security. The most important and indispensable of the suggestions are these:

That twelve months after ratification of both security and arms limitation agreements the interested parties shall proceed to scale down their reparations and war debts by 25 per cent—provided no violation of the pact has taken place.

That every five years thereafter of unbroken peace, reparations and war debts shall be scaled down another 25 per cent, until the fifteenth year, after which all such payments shall cease.

Dr. Hjalmar Schacht, former head of the Reichsbank, in an impassioned speech in Sweden a few weeks ago voiced again the irrepressible and increasing demand of Germany for abandonment of the dogma of Germany's exclusive responsibility for the World War. This point is crucial in the whole situation and there will be no peace until it is disposed of. As Dr. Schacht says, "it poisons the moral atmosphere." It is and always was a lie, conceived in sin and shapen in iniquity; believed only by those who swallow propaganda neat. Everybody who has candidly reviewed the evidence knows it to be false—regardless of the innumerable sins of brutality and heartless stupidity committed by the Germans during the War. But that historic falsehood, imbedded in the Treaty of Versailles and assented to by the Germans at the point of the bayonet, is the keystone of the whole structure of "settlements" after the War.

Once the assumption of Germany's exclusive "war-guilt" is

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abandoned, the entire system of reparations at her expense including the payment of war-debts among the other nations and by them to the United States comes down like a house of cards. It is simply hypocritical nonsense for us to pretend that payments to us must be or can be separated from the exaction of war-tribute from Germany. The one depends directly upon the other. It appears to be—though it is not—to our financial interest to keep alive the fiction of Germany's exclusive guilt upon which the whole interplay depends. Our acknowledgment that it is a fiction would exhibit the moral quality, the desire to heal the wounds of the world, which we have not as yet displayed. There will be no peace or genuine economic recovery anywhere until we recognize openly the nature of our own position and take the moral leadership for which Simms so sanely appeals. Every hour of delay and pious evasion does us a mischief.

THE weight of our influence in world public opinion can be seen in Turkey's announcement in late February of adoption of the system of import and export certificates under which (to the extent of its actual enforcement) exporters of narcotic drugs must show written authority from the country to which they are shipping. This is the best and most unexpected news that has come out of the "opium" mess in many moons. Turkey was getting to be a very bad new spot in this business. Being party to neither the Hague nor the Geneva convention and being also a land of favorable climate and cheap labor, the raw material can be cultivated there; poppy-culture has grown to great and extremely profitable proportions. German, Swiss, French and Japanese drug manufacturers have set up plants there in refuge from increasing restrictions in their own countries. And the corruption of it has gone deep into the Turkish political structure, just as it has in Persia.

But even Turkey must heed the pressure of the United States. Aside from any moral aspect of our influence, we can hold up all manner of innocent imports while we search at our leisure for narcotics! A potent weapon, to which we have not sufficiently resorted. An Associated Press dispatch from Istanbul quotes the manager of the recently established Japanese drug-factory as saying that the new regulations may put him out of business altogether—tacit admission that his product, like that of his confreres of other nationalities, must have been going straight into the channels of illicit traffic.

SLOWLY but surely time is mitigating the chief racial problem in America—that of the Negro. I am writing this in the South, the Far South, and I have talked with representatives of both races, the same individuals with whom I talked nearly fifteen years ago. I think there can be no doubt of a definite change in temper. Upon that first occasion it would have been impossible for me to get away with a thing I said yesterday to one quite typical Florida business man:

> I have just seen figures showing that in 1927 Florida spent for the education of white children at the rate of $42 per capita; for Negro children at the rate of $7.33. If what you have just said to me about the ignorance of the Negroes in Florida is true, don't you think the figures should be reversed? If Florida were civilized or even had ordinary common-sense, wouldn't it be spending the most educational effort on the most ignorant?

Yes, I got away with it. He said he couldn't think of any good answer. Of course not—there isn't any. And just now, at Lakeland, Florida, under the leadership of Dr. L. M. Spivey, president of Southern College, there has been held an interracial conference at which the reasonable appeal of the Negro against conditions such as these was not only heard but applauded. Mary McLeod Bethune, the plantation-born Negro president of Bethune-Cookman College for Negroes, proud of her race and asking only for the long-belated square deal in education and opportunity, made a profound impression—upon the whites who heard her.

The second generation, between slavery days and now, is dying off, praise be! A smooth and happy passing to them. Coming on the stage all over the world is a new generation, learning the technique of talking things over candidly, in the spirit of good-will and intention to settle.

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WHAT WE CALL INTELLIGENCE

(*Continued from page* 19)

thinking away from pitfalls. Familiarity with the principles represented in statistical technique suggests types of comparison which can be made and modes of false inference which are to be avoided. The ability to think through complex problems is doubtless created to some degree by the possession of ideas or concepts which serve as counters to thought. The use of an appropriate set of symbols, such as the mathematical, enables one to short-cut thinking and thus to grasp relations which would otherwise be incomprehensible. If it is objected that all these factors, depending on training, constitute a super-structure built on the foundation of raw, uninstructed intelligence, the reply must be that there is no such thing. Ability is always a composite of the two, and the belief that they can be separated by means of tests is an illusion. Performance, which is all we can measure, is always dependent in important degree on such factors as the above. Performance, therefore, can be influenced by education.

In addition to the primary abilities, we should perhaps include, as secondary factors, certain intellectual dispositions. The effectiveness of thinking, for instance, will depend to some extent on the degree of initiative or drive which is behind it. Unusual attainment along either general or special lines is often attributed to the vigor and energy with which an intellectual enterprise is pursued rather than to the possession of exceptional initial ability. Akin to this characteristic is interest. An unpublished study of the factors in the prediction of success of college students in their academic work indicates that the superior students differ from the inferior ones in the type of interest they express in reading, music and theatrical performances. Finally there are undoubtedly attitudes which affect intellectual performance and development favorably and others unfavorably. Confidence in the possibility in general of solving the puzzles of the world and in one's own ability to solve them inspires persistence of effort and carries one over difficulties. A sense of the value of intellectual pursuits stimulates one to follow them. It is plausible to suppose that such dispositions as these are fostered by example and precept and are otherwise influenced by the experiences of life. It may be not too far fetched, then, to consider this influence as one of the ways in which intelligence may be indirectly increased.

To sum up: The opinion that intelligence is not susceptible of improvement is based partly on a conception of intelligence which was formed to correspond with the apparent finding of early investigations that intelligence is fixed. This conception of intelligence remains to bar the acceptance of new evidence, when that evidence seems to indicate that intelligence can be modified. The purpose of this paper is to outline a conception of intelligence which is psychologically sound and which provides for the possibility of improvement through education and experience in general. Intelligence, according to this conception, is measured by the effectiveness of thinking. This effectiveness is based primarily on the quickness and accuracy of thinking, on the range of problems which can be dealt with effectively and on the difficulty or complexity of problems with which one can cope. It depends secondarily on intellectual drive or initiative, intellectual interests and on attitudes toward intellectual affairs. All these factors, both the primary and secondary, are doubtless subject to the influence of education.

THE PATTERN OF PERSONALITY

(*Continued from page* 23)

logical difference. But this is true, that a boy baby and a girl baby, though born under the same roof, sleeping in the same bed, eating the same food, are nevertheless, living under different environmental forces and in different worlds. From the start the boy is trained toward fortitude, fighting spirit, and achievement. From the start the girl is subject to those influences in the community which make for personal vanity, gentleness, emotionality, and lack of achievement. It may be that the boy and the girl are praised for what are natural qualities, though I doubt this. I believe that they are praised for what

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men have felt to be desirable qualities for *them,* and especially is this true of the girl.

For many women, the main achievement in life is to be beautiful, an achievement, alas, which only a few can reach and in the striving for which a petty world is established. We cannot say whether women have as much latent intellectual capacity as men until the tradition of life makes achievement as praiseworthy and highly desirable for them as it is for men; until tradition establishes the fact that it is not unwomanly to be ugly and intellectual. In other words, whatever the potentialities of a woman are, the environment selects certain qualities to develop in her and elects to suppress and inhibit other qualities. The environment operates on each boy in a selective way quite differently from its operation on the girl and so part of the differences between the adult man and woman in our present day represent the selective environmental influences.

This brings up the whole question of eugenics and euthenics. The eugenists are apt to openly deride the efforts of those who work for social and intellectual betterment on the grounds that this is against the welfare of the race, is cacogenic. I do not believe that this point of view can be held any longer. It may be true in individual instances. It may be advisable to sterilize certain groups of the insane or feebleminded. But it is quite possible that feeblemindedness may result from hurt germ plasm, that in a large sense environmental forces and hereditary forces are merely names for external forces and inner forces which are not independent. It is a bit presumptuous to think that the tiny germ plasm is walled off and independent of the cosmos or even independent of forces which human beings can control. It is not incredible that what each individual experiences may have some value in determining the normal potentiality of his germ plasm. That experience will involve the kind of food he gets, the kind of infections he meets, the kind of air he breathes, and the amount of sunshine he receives, as well as those more subtle but equally potent matters, which we call psychological. Each individual is born different by virtue of his germ plasm peculiarities; how these will express themselves, nay even whether they will express themselves at all, depends upon the environment. This is true of height, weight, and psysical strength; it is even more true in that plastic organization of qualities we call personality.

CULTURE AND PERSONALITY
(*Continued from page* 45)

musically by heredity in order to develop an interest in, and an active enjoyment of, music. The writer was present at a game between two colored football teams at Baton Rouge, Louisiana. Whenever there was the slightest lull in the athletic activities, the band began to play and the whole audience would sway in time with the music. The children swayed with their elders. One mother nearby held a baby, and she was beating time with one of the baby's hands. At this early age she was quite unconsciously giving her child his first lesson in the appreciation of rhythm, which he was made to feel with his whole body. Here is a definite cultural influence helping to shape the musical future of this individual.

The best proof that American Negroes are musical by culture rather than by heredity is furnished by the decreasing importance of music in their lives as they leave the South for the North, and the country for the city. They may for some time remain more musical than the whites among whom they live, but they are much less musical than the Negroes whom they have left behind. The distinctive music disappears from their homes and their churches and they gradually become, in this as in other respects, more and more like their white neighbors. They no longer require the refuge which their music gave them in their condition of slavery and which it still gives the southern country Negro who is not always so far removed from that condition. They take on culturally the color of their environment.

The effect of culture on individual personality is at once so subtle and so thorough that it becomes next to impossible to determine just where it begins and where it leaves off. It is more than probable that (*Continued on page* 70)

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Spring is here—with summer and vacation not far behind!

THE World Acquaintance Travel (20 West 43 Street, New York) is organizing a tour, under the leadership of Dr. Edith Elmer Wood, for those desiring to devote the fortnight preceding and following the Thirteenth International Housing and Town Planning Congress in June, to study English, Dutch, German and French housing; also a Friendship Tour sponsored by the Reformed Church in America; and a number of special music tours.

The City Affairs Committee of New York (112 East 19 Street) in conjunction with the Garden Cities and Town Planning Association of London, will conduct a study tour (July 10-August 13) of national, municipal, cooperative and limited-dividend programs of housing in England, Austria, Germany, Switzerland and France.

The American Express Company (65 Broadway, New York) has arranged a number of pre- and post-congress tours around the International Hospital Congress in Vienna June 8-14.

Margaret Pollitzer (1621 Franklin Place, Milwaukee, Wis.) and her husband, Mr. Hoben (we're strongly tempted to tell that their marriage is the result of a romance that began in Russia), are taking over a group through the Open Road, and will cover the most interesting industrial developments in the Soviet Union. This is a particularly inexpensive trip—leaving New York on June 23, and spending 28 days in the U. S. S. R.

The Wicker Tours (Richmond, Va.) have issued a program of alluring trips: a Music Festival Tour (July 3-Aug. 31), under the direction of the celebrated pianist, John Powell; a Western Tour, sponsored by the National Education Association, through the Canadian Rockies and the West Coast; a Universal Travel Club Tour (July 3-Aug. 9 and 23) to be led by Professor Jesse H. Binford.

The Drama League of America (15 West 44 Street, New York) announces a general tour with Walter Pritchard Eaton; one to Russia with Sheldon Cheney; and one to the Malvern Festival, including the Bath Theater School.

The Open Road (20 West 43 Street, New York) lists a Student Hospitality Tour (July 7-Sept. 5) through London, Paris, Biarritz, Salamanca, Madrid, Barcelona, Carcassonne, Nice, Florence, Geneva and so on; and a Special Interest Tour (June 23-Aug. 25) which will afford an opportunity to acquire first-hand knowledge of the classical and medieval cultures of the Balkans and Greece.

The Committee on Cultural Relations with Latin America (112 East 19 Street, New York) will hold its sixth seminar in Mexico July 4-24.

The Austrian Tourist Information Office (400 Madison Avenue, New York) advises that sightseeing trips in and around Salzburg have been designed for amateur photographers, and will be conducted by authorities in the art of taking pictures.

I. R. I.

THIS is indeed an auspicious time for the consideration of "Social Economic Planning—the necessity for planned adjustment of productive capacity and standards of living," which is the subject of the International Industrial Relations Associa-

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tion (the I. R. I.) congress in Amsterdam, August 23-29. Its membership, spread over twenty-nine countries, includes industrial executives, labor leaders, industrial relations consultants, economists, bankers and others actively concerned with "the study and promotion of satisfactory human relations and conditions in industry."

One session will be devoted to The Present Paradox-Unemployment in the Midst of Economic Progress. Dr. Otto Neurath, director of the Social Economic Museum at Vienna, will discuss the recent growth in the world's productive capacity and show a series of new-type graphs picturing the world's resources and their utilization as the economic basis to make possible the raising of standards of living throughout the world. Another session will be devoted to Potentialities in National Economic Planning as illustrated by nations in different economic regions of the world; and there will be first-hand reports from the Union of Soviet Socialist Republics concerning their experience in economic planning.

Other topics on the program are The Cooperative Movement; The International Bank, Its Potential Relation to Planned Production; The Necessity and Means for International Economic Planning; International Planning by Industries; Mass Distribution and Standards of Living; The Workshop in a Changing Economic Environment. Among the Americans participating are H. S. Person of the Taylor Society, Lewis L. Lorwin of the Brookings Institution, Edward A. Filene, H. H. Broach, president of the International Brotherhood of Electrical Workers, Prof. Joseph P. Chamberlain, Morris Llewellyn Cooke, W. A. Berridge, economist of the Metropolitan Life Insurance Company, Susan M. Kingsbury and Mildred Fairchild of Byrn Mawr College, and Paul U. Kellogg, editor of Survey Graphic. Complete program and other information can be had from Mary Van Kleeck, 130 East 22 Street, New York.

Meetings

National Federation of Settlements conference, June 12-14, Excelsior, Minn.

National Conference of Social Work and associate groups, June 14-20, Minneapolis, Minn.

International Federation of University Women meeting in April, Wellesley College, Mass.

International Federation of Trade Unions (31, Tesselschadestraat, Amsterdam) Congress this spring, in Madrid.

International Chamber of Commerce, sixth congress, May 4-9, Washington, D. C.

International Congress for Religious Psychology, May 25-30, Vienna.

International Housing and Town Planning Congress, June 1-5, Berlin.

International Congress of Agriculture, June 5-8, Prague.

International Hospital Congress, June 8-14, Vienna (Dr. E. H. L. Corwin, 2 East 103 Street, New York).

International Congress of the History of Science and Technology, June 29-July 3, London.

International Congress of Radiology, Paris, the end of July.

International Dental Congress, August 3-8, Paris.

International Geographical Congress, August 8 through September, Paris.

International Student Service Conference, September 1-10, Mount Holyoke College.

International Conference of Industrial Psychology in Moscow, about the middle of September.

International Association for Social Progress (1 Rebgasse, Basle) will meet in Paris the week preceding or following the International Labour Conference.

International Congress of Comparative Pathology, October 14-18, Paris.

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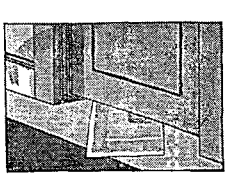

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(*Continued from page* 67) it helps to fix the direction and the strength of what are usually thought of as fundamental instinctive drives, and that it is an important factor in shaping emotional life and determining the details of emotional expression. This does not mean that there is not a "human nature" which serves as a foundation for all activities, but it does mean that it is a tremendously difficult task to separate this "natural" foundation from the cultural superstructure. It seems "natural" to clench one's fists in anger, but the Melanesians do not clench their fists; they make a motion of the hand and arm as if to throw a spear. It seems "natural" to shake one's head in negation; the Eskimos, however, make a certain movement with the muscles of the face instead, and the Sicilians raise the head slightly. Similar illustrations might be multiplied.

To repeat, this does not mean that there are no essentially human characteristics apart from culture. Nor does it mean that there are no individual differences which are due to heredity. Individuals and families within exactly the same culture will still show certain differences which in many cases undoubtedly require an explanation in terms of heredity. But, to return to eugenics, many of the characteristics which have often been referred to heredity are in such large measure modified, if they are not created, by cultural factors, that it becomes of paramount importance to determine just how much there is left which is really due to heredity before any eugenic program can rationally be undertaken. So far no eugenist has succeeded in making this determination. Until it is known how much personality depends upon culture and how much upon heredity, and until some means is discovered of deciding between the values stressed by different cultures, no thoroughgoing program of improving the human race by means of eugenics can possibly be accepted.

NATURE AND NURTURE

(*Continued from page* 11)

diverse careers. His genes do not condemn him to one fate only. But they do fit some individuals for one career, others for another, and some for none. They do give different powers of adaptation to different individuals, resulting in the many grades and types of superiority and inferiority. They are responsible for a large proportion of the variety that makes life interesting; but not for all of it.

What is the chance for the improvement of human society by increasing the proportion of superior and adaptable types of gene combinations? The great difficulty here is that a new gene combination is made with every child. If children could be so produced as to bear to the parent the same relation that identical twins have to one another, so that they would have the very same gene combination as the parent, the problem would be a simple one. It would be necessary only to choose the types considered desirable, to allow these to breed; and to suppress the breeding of all others (a sufficiently large order!). Then in the next generation the world would contain only these types.

But this method, although it can be carried out for plants and lower animals, is not practicable for man. Improvement of the human stock must depend upon much less direct and effective methods. The principles involved are these: Parents that bear superior combinations of genes, although they give rise to children with different combinations from their own, nevertheless do produce, in the long run, children with better gene combinations than do parents with poor sets of genes. That is, there exists, when considered statistically, a correlation between the qualities of parents and the qualities of their offspring. A million adaptable, intelligent parents produce a greater proportion of adaptable, intelligent children than do a million stupid parents. By increasing the propagation of the adaptable parents and decreasing that of the stupid parents, the general level is slowly raised, although the process is a very slow one. The adaptable parents produce many stupid offspring; the stupid parents many intelligent offspring; but the proportions are diverse in the two sets of parents. The same situation exists with respect to any quality or characteristic If we choose a large number of parents possessing that quality,

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they will give a greater proportion of offspring having that quality than will parents that do not themselves have it. These principles make it possible to improve humanity in definite ways, if we can agree upon the direction in which we wish to move it. But the results, even after such agreement is attained, are bound to come with extreme slowness.

There are some severe defects that depend on the presence in the individual of certain particular single defective genes. Such are certain types of feeblemindedness, certain types of insanity, and a number of other defects and deformities. With such single-gene defects much can be accomplished by preventing the propagation of the person bearing the defective gene. This includes the persons who are themselves personally defective. But it includes also a much larger number of persons that bear the defective gene in the "recessive" condition; that is, protected by the presence in the same person of a healthy gene of the same type. This latter set of individuals are not personally defective, so that the presence of the defective gene in them is not discoverable; yet it may cause them to produce defective offspring. This situation makes the process of getting rid of even severe defects due to single bad genes a slow one. Nevertheless, 10 to 30 per cent of the feebleminded could be gotten rid of by stopping completely the propagation of feebleminded persons; certainly a most worth-while result.

Improvement of the human breed is thus possible and worth while; but it is bound to be enormously slow, even if intelligently planned measures are carried out. In the mean time, while waiting for "nature" thus to do its perfect work, it would be unfortunate to relax attempts to ameliorate the human lot through "nurture," through improvement in physical and intellectual and moral conditions; for what these do they can do quickly.

WELL-BORN CHILDREN

(*Continued from page* 37)

relatively that is not the case. It seems highly improbable that the size of families in intellectual classes can be greatly increased; but they might become a proportionately larger part of the general population if the families of other classes were reduced in size by the practice of contraceptive measures. We may believe from experiences in Stockholm and Moscow that the present great disparity in family size in favor of the less skilled can be greatly reduced or even reversed. The rapid growth of world population would be thus slowed down, an end in itself desirable.

Better distribution of wealth is in itself a device for positive eugenics. It is often said that poverty increases the size of the family. We now have good evidence from the study of Harvard graduates by F. A. Wood that within any one educational group this is not correct; that the reason why the poor have larger families is not their poverty but their poor education in the technique of married life. Thus, if the income of the well-educated person having a salary of $1800 a year were tripled, it would be more likely to increase the size of his family than reduce it.

It would go too far afield to enter into a detailed program for a better distribution of wealth. However, occupations which call for the rarer traits, such as intellectual groups have, should receive a larger compensation than is sometimes allotted to them. Probably one of the best devices in this direction would be a more rigorous selection for admission to professional schools on the basis of mental and other tests insofar as this can be accomplished without unduly prolonging the educational period. The underpayment in some professions is probably the result of overcrowding with persons not well adapted to its demands. A further device for better distribution of income is to apportion the salary partly in accordance with the number of children. This is done avowedly in one of our American colleges and somewhat indirectly in others. A proposal to introduce this principle in the clergy is at present under consideration and merits attention.

Properly graduated income and inheritance taxes offer eugenic assistance. This arises because the general exemption leads to the special exemptions about to be mentioned influencing only parents who are on the (*Continued on page* 72)

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(*Continued from page* 71) whole desirable progenitors. The following schedule is suggested in addition to the present exemptions for man and wife: $1000 for the first child, $2000 for the second child, $3000 for the third child, $4000 for the fourth child, and so on. Similarly, inheritance taxes should be based upon the size of the bequest rather than on the size of the estate, and where there are two children each child should pay one-half of the normal tax schedule for his bequest; where there are three children, each to pay one-third, and so on. These exemption provisions are in no wise inconsistent with steeply graduated taxes scheduled as to size of bequest; in fact the steeply graduated taxes are very desirable in order to make these exemptions possible, as well as to restrain the interference with reproduction which excessive incomes seem to have. On the other hand it must not be supposed that baby bounties for the whole community would have eugenic value; on the contrary, they would be distinctly dysgenic as tending to most influence those with smallest income.

High repute for individuals of eminent contributions of social value who have large families would in itself be a powerful eugenic incentive. Unfortunately in the western countries there is little force of social distinction in the propagation of a large and superior family. Its hold in the Orient, however, makes us believe that this incentive might be developed. That we have some germs for such a development is shown by the widespread publication of a group family picture by a political candidate who has a large family.

As our ethics become a product of the scientific study of the results of our acts, a change which is taking place universally and rapidly, it would seem that the ethical sanction for the larger family from superiors would become more effective. The world has some very valuable genes and combinations of genes in its great men which are in danger of loss. If eugenics should limit itself to mere attempts to reduce the reproduction of the markedly inferior, it will be recreant to its task. This task should embrace as an equally important aim the preservation and increase of those valuable genes. This is to be done by promoting the survival, marriage rate, quality of mates, assortative mating, and increase in the number of offspring of the bearers of such genes in the ways here outlined; and by other means which we should be eager to discover.

SOCIAL CLASSES AND THE BIRTHRATE

(*Continued from page* 39)

The fact that the birthrate for the upper classes is relatively low for marriages to which large families may be economically most burdensome, and relatively high for marriages to which children are likely to be most welcome, lends little support to the theory that the low birthrate in these classes is explained by an inability to reproduce rapidly, and suggests strongly that conception is increasingly subject to voluntary control as social status rises.

However the case for differential voluntary control of conception by social class is not entirely proved. Quite possibly marriage itself is a selective process which operated differently in different social classes. It may be that in all classes the most fecund women tended to marry earliest, but that this tendency was restricted in the upper classes by the greater strength of motives for postponing marriage—such as the desirability of an education or a higher standard of living. At present there is no means of demonstrating the existence of such a differential selection, to say nothing of measuring its importance. It seems unlikely, however, that it could account completely for trends of the magnitude observed, and probably, therefore, that for the women of this study voluntary control of conception was more prevalent in the upper than in the lower classes.

It has been pointed out that the birthrate declines with advancing age at marriage, and that age at marriage advances with rising social status. In view of these facts is it possible that differences in age at marriage alone account for the inverse relation between net fertility and social status? Evidently this is not the case. Chart 3 shows the birthrates presented in Chart 1 after the influence of differences in the age-at-marriage distributions have been eliminated. With one exception the order of the classes is the same as in Chart 1. Women of the upper classes would have been less (*Continued on page* 75)

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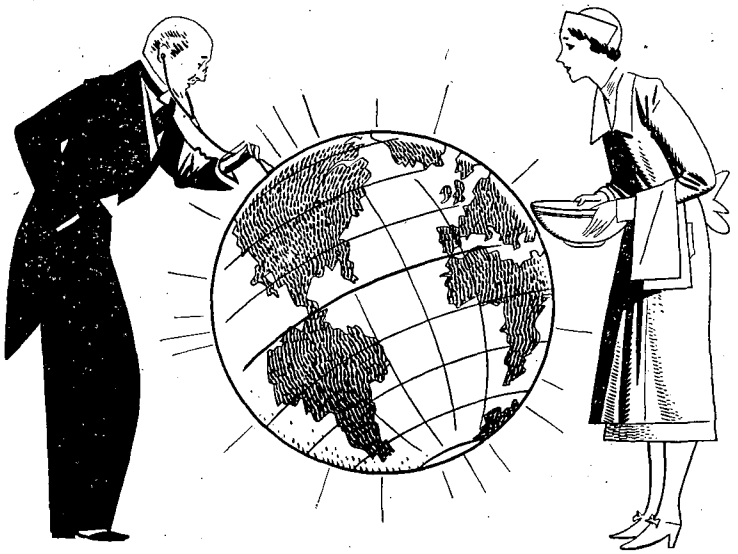

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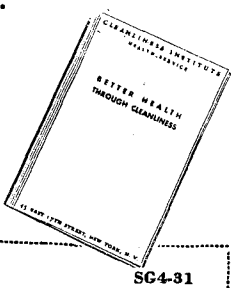

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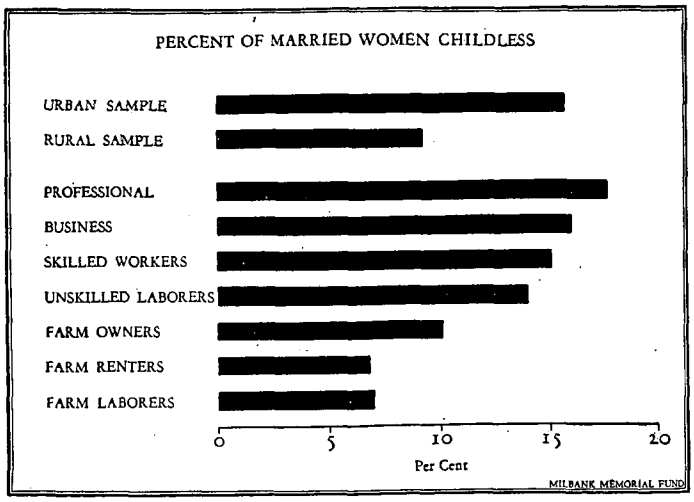
(*Continued from page 72*) fertile than those of the lower even if they had not married later. After correction for marriage age, the difference in the birthrates for the professional and business classes becomes insignificant. In view of the similar social backgrounds of these two classes this result is not surprising. The lower net fertility of the professional class was almost entirely due to later marriage, and this later marriage probably reflects the higher educational requirements of the class.

Although correction for differences in age at marriage does not change the order of the classes, it does decrease the spread of the birthrates. It reduces the differences between the birthrates for the professional and unskilled laborer classes from 94 to 62, and that between the professional and farm laborer classes from 170 to 126. We may safely conclude, therefore, that although differential age at marriage did not entirely account for the inverse relation between net fertility and social status, it was an important factor in bringing that relation about.

The extent to which differences in the net fertility of the social classes may be due to differences in the proportion of married couples who are either unable or unwilling to have any children, is a problem of the greatest biological and sociological significance, and one upon which heretofore it has been virtually impossible to obtain trustworthy information. Chart 4 shows for each class the proportion which childless married women 40 to 49 years of age formed of all married women the same age. Since only a negligible number of these women would have borne their first child after that age, the ratios give an adequate picture of the situation. There is a striking difference in the proportion of childless marriages found in the urban and rural populations. In the country no-child families constituted only about 9 per cent of the total, but in the city they comprised nearly 16 per cent. In the urban sample, as we proceed down the social scale the proportion of childless marriages dwindles from about 18 per cent for the professional class to 14 per cent for the unskilled laborer class. The farm owner class had the largest proportion of no-child families in the rural population, but even in this class the proportion of such families was only about 70 per cent of that found in the unskilled laborer class. In the farm renter and farm laborer classes childless marriages constituted about 7 per cent of the total. They were about 30 per cent less frequent than in the farm owner class and approximately 60 per cent less frequent than in the professional class. There can be no doubt that such differences in the proportion of childless marriages, like those found in age at marriage, played an important part in bringing about the relatively low net fertility of the urban population, and the particularly low birthrates of the "upper" social classes. The cause of these childless marriages—whether they represent choice or sterility or both—is not apparent from our data; however, as has been suggested above, there seems reason to believe that voluntary control of conception is practiced more widely among the urban and "upper-class" groups, who have the lower birthrates and the higher proportion of childless marriages, than among the rural families and the laborers in cities where children are more usual and numerous.

Chart 4



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(*Continued from page* 77) His smooth face, his childlike voice warn the attentive at once that there is something wrong. The roentgenograms of his bones demonstrate that, in spite of all his birthdays, his developmental age is but thirteen years. By great good fortune the brain, which reaches almost to adult development at six years, has not shared this retardation. He is a useful citizen despite his handicap. The situation is not always so hopeful as in this lad and other cases of maldevelopment present a very different problem indeed.

From this broadly outlined sketch it is apparent that we may hope for help in understanding the social dilemma into which many young people are thrown through no fault of their own. The blossoming of adolescence is not a long slow process but a quick one, often completing all its features within nine months. But for some children that period starts as early as twelve years whereas others do not encounter it until seventeen. Adjustments of the new physical and mental patterns to environment take much more than nine months and hence the so-called "awkward age." Roentgenograms of the skeleton warn us of the immanence or otherwise of this period of change and enable the wise parent to prepare a family adjustment for the growing child. It is rather a significant fact that our studies of wayward girls show the majority of these young people to have encountered adolescent blossoming unusually early. They are older than their birthdays by anything up to five years. Our social conventions take no note of these individual differences and the adjustment of such children is often a difficult problem for them. Given a brain which has not suffered in its developmental progress through some hampering disease in early life or through some defect in heredity, the child can usually make at least a working adjustment though his personality may suffer in the process. If however the mental power be subnormal, chances of adjustment are correspondingly poorer and the Juvenile Court may have to take a hand.

Regular periodic assessment of skeletal development will, in time, be forced upon us as an ordinary measure in the training of positive health habits. It is a simple means of estimating real progress towards maturity which we shall never learn by counting up the birthdays. It is one of the least embarrassing methods of registering the problem of adjustment which as parents and guardians, we are called upon to face. And it is because of its immense value in our efforts towards social improvement, that Cleveland has put so much vigor into a study of the telltale skeleton.

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research carried on under the Committee of the Causes of War. It is expected that the coordinator will consult frequently with his colleagues on the committee, but it is clearly understood that his will be the responsibility of making the final decision. Whether or not this is the necessary culmination of cooperative research remains to be seen. The Personality Committee is trying one experiment; the Causes of War Committee another. At the end of another year or two we hope not only to have produced contributions to a study of the causes of war, but to have been able to answer in part the vexing question of how to do cooperative project research.

The net result of our deliberation by the lake was that perhaps there was some truth in the casual assertion of the biologist that we could not yet lay claim to being real scientists. Our scientific problems seemed extraordinarily complex. Only recently were we beginning to develop a personnel trained in these disciplines, eager to discover truth for truth's sake without ulterior motives; only recently have we set out to develop the observer as an instrument of known precision, as a microscope not free from bias, but with a bias that is becoming measurable; only recently have a few of us deliberately turned our backs on social improvement and delved into what may be called the pure scientific aspects of our discipline. We have a long way to go, but it is at least heartening that not only a few individuals, but a few large organizations with resources behind them are setting out to make a science out of what has up to the present been merely a subject matter.

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